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STUDIES IN METAPHORIC VERBAL BEHAVIOR IN PATIENTS WITH A PSYCHIATRIC DIAGNOSIS OF SCHIZOPHRENIA

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Sundsvall Hospital
January, 1968
Carl-Erik Brattemo

a) Microfilm copies of published papers, written by the author, summarized in the present monograph, can be obtained from the University Library, Uppsala, Sweden.

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Chapter I

INTRODUCTION

The study of cognitive functions has for a long time been an essential part of psychological research. A part of this research has centered around the problems of concept formation and abstracting ability. In this context the effects of various psychopathological states have also come into the focus. Schizophrenic patients, in whom one of the main symptoms according to Bleuler is "disturbances of thinking", have then become of special interest [a] (Bleuler 1950).

The methods of inquiring into the problems of conceptual and abstracting functions in schizophrenic patients have been many. We have used one of the methods available, namely a series of proverbs. Proverbs initiate various types and degrees of metaphoric verbal behavior and have proven to give promising results and to reveal new aspects on the verbal side of schizophrenic thinking (Gorham 1961).

The series has been used in two forms. In one the Ss gave their own spontaneous interpretations of the proverbs. In the other, a multiple-choice form, they checked for each proverb one of four interpreting alternatives categorized beforehand (Dureman and Sälde 1959).

A. *The starting point*

Our series of studies started with a pilot study of schizophrenic and depressive female patients who at the time of examination were newly admitted to the clinics and who had had a short total time of hospitalization, n=20 patients in each group (Brattemo 1961). All patients had some form of psychiatric treatment when examined, mainly psychopharmacological. The groups were matched for age and verbal intelligence. In the last variable the patients were comparable to a normal group. The dependent variable was the multiple-choice form of the proverbs series.

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a) It can naturally be argued, as Eyseneck and his coworkers do, that it is unfortunate that psychological investigations at all cling to psychiatric diagnostic labels as if they were of fundamental importance in the analysis of cognitive disturbances (Payne 1960). Nevertheless, at a psychiatric clinic we are daily confronted with psychopathological syndroms of which some are conceived as clustering to a main syndrom which, for better or worse, is called schizophrenia. When choosing this syndrom for study we are well aware of the ambiguities connected to it, as are many psychiatrists.

According to one line of research schizophrenic patients show marked disturbances when interpreting proverbs indicating a low level of abstraction and a high level of concreteness (Gorham 1956a, Elmore and Gorham 1957). The pilot study implied however, that schizophrenics compared to depressives could not be characterized as markedly concrete in their way of responding to the proverbs.

The response alternatives of our proverbs series were constructed to give a measure not only of the abstractness — concreteness tendencies of the patients but also of their ability to respond in a logically adequate or inadequate way (Dureman and Sälde 1959). Compared to depressive patients the schizophrenic showed some predominance, though not significant, of concrete illogical responses while the predominance of abstract illogical responses in these patients was both marked and significant. On the other hand, the depressives showed a significant predominance of concrete logical responses. Altogether this meant that the schizophrenic patients compared to the depressives gave significantly more of logically inadequate responses if disregarding their abstractness — concreteness.

B. *Specifying the problems*

The pilot study gives rise to both general problems and specific questions. Although the specific questions refer properly to the review of literature which is the content of next chapter we place it in this context for the sake of clarity.

We start with two general problems:

1) What characterizes metaphoric verbal behavior of schizophrenics in terms of proverbs interpretations?

2) What relations are there in schizophrenics between changes in metaphoric verbal behavior and changes in clinical state evaluated psychiatrically, on the one hand over a short period of time with intensive psychiatric treatment, on the other hand over a time of approximately five years with less intensity of treatment.

These general problems are specified in the following points:

a) In connection with the concept of schizophrenia as elaborated by Langfeldt and others it can be stated that schizophrenics with a development in direction of poor outcome, possibly chronicity, in spite of treatment, are more genuine schizophrenics than other patients. The question is if these patients over the period of deteriorating state show more of metaphoric verbal disturbances than other patients.

b) Connecting with Cameron's concept of social disarticulation it can be supposed that chronic schizophrenics hospitalized during considerable time will be less efficient in metaphoric verbal behavior than chronic schizophrenics living in their home environments because of differences in social and verbal stimulation between the two types of environments.

c) Connecting with the construct of overinclusiveness it might be expected that there is a greater amount of such responses the more severe the schizophrenic illness is.

d) Among brain damaged, schizophrenic and normal groups it might be expected that the brain damaged and the schizophrenic groups give most, normal groups give fewest concrete responses.

e) Introducing "attention" as a differential explanatory construct related to variations in metaphoric verbal behavior paranoid patients might be expected to be more selectively attentive than non-paranoid patients.

f) Related to the possibility that the mesodiencephalic reticular system might be one site of action of brain damage of the commotio type and of neuroleptic treatment it might be expected that groups of patients affected or treated accordingly are similar with one another in metaphoric verbal behavior.

g) An open question has to do with the effects of LSD-25 on metaphoric verbal behavior. According to Elkes (1958) this drug may interfere with the organization of temporal and spatial experience as well as the selective exclusion inherent in the process of logic and abstraction. Such an hypothesis about the action of LSD-25 would suggest that disturbances in metaphoric verbal behavior obtained under use of this drug would coincide with those observed in acute schizophrenic state.

C. *Synopsis of the studies described in following chapters*

We started with a theory about concrete response preferences in schizophrenic patients mentioned above in the review of the pilot study. That study provided some new viewpoints on the problem area of metaphoric verbal behavior. We decided therefore to continue the studies focusing primarily on enlarged and new groups of schizophrenic patients [a], centering the studies around the first general

a) Schizophrenic patients examined and reported in these studies are those admitted to the psychiatric clinics. This means of course a certain selection within the schizophrenic population besides the other criteria used in choosing Ss. In

problem stated in the preceding section: What characterizes metaphoric verbal behavior of schizophrenics in terms of proverbs interpretations?

For the purpose of comparison we replicated the proverbs examinations on other groups with different diagnoses supposed to represent other degres of and/or variations in metaphoric disturbances. In focusing further on schizophrenic patients we studied if changes in ability to perform metaphoric tasks go parallel with changes in psychopathological states. These studies of changes in schizophrenics were compared with changes in depressive patients. Normal groups were also used for comparative purposes.

The pilot study covered only the results of interpretations in the multiple-choice form. We considered it interesting and also necessary to evaluate the metaphoric verbal behavior in terms of the free spontaneous interpretations of the proverbs to see if additional diagnostic information could be obtained. In the continued studies we therefore used both forms.

Thus far the studies were of a preparatory kind and form background material. The results of them are summarized in chapter IV. Chapters II and III give a theoretical background to our studies and a description of groups and methods used.

Another general approach is used in a follow-up study of one

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the study as a whole we have put the emphasis on Bleuler's conception of schizophrenia because his fundamental symptoms with the addition of one or more accessory ones constitute the basis for diagnosing and admission of patients as schizophrenics. The diagnosis "schizophrenia" as used by us is thus a more wide one and not as restricted to the concept "genuine schizophrenia" as that advocated by Langfeldt, or, for that matter, by Kraepelin.

Because only one senior psychiatrist is formally responsible for the final diagnoses of the patients there is of course an unknown element of subjectivity inherent in them, the effect of which has to be discussed. We limit the discussion to the main group presented in chapter V and labeled Neur. The general discussion is applicable however to other groups as well, schizophrenic or not.

First, it should be remembered that one third of the patients had their first admission to the clinics when another psychiatrist was the senior one and responsible for the diagnoses. Secondly, the diagnosing is never one man's job but the result of several discussions within the staff of psychiatrists working in the particular clinic of the mental unit. Thirdly, the diagnoses of the patients selected as Ss in the several studies, specially in the main study, were discussed and finally confirmed by the senior psychiatrist of the clinic in question assisted by an experienced junior psychiatrist. In all, the diagnoses were affirmed at several times and by several psychiatrists and finally confirmed by senior psychiatrists assisted by junior ones.

As to the process of diagnosing a patient as schizophrenic it is difficult to give

of the groups presented in chapter III with some results summarized in chapter IV. This complementary study not published earlier constitutes the main study and is presented in chapter V. The group consisted of male schizophrenic patients, n=42, whose general development we followed during the years 1960/1961 till the midst of 1966. They were examined at three times during that period. Changes in metaphoric behavior were compared to global clinical evaluations made by a psychiatrist firstly over a short period of intensive psychiatric treatment on the ward, secondly over a period of approximately five years. During this period there was great variation between the patients as to the length and number of times they were readmitted to the clinics, also as to the intensity of psychiatric treatment outside or inside the clinics. Both at the end of the intensive treatment period and at the end of the five years period the patients were seen and again evaluated by the senior psychiatrist. At the same time the proverbs test was administered.

The question which this other approach aims to answer constitutes the second general problem which also has been stated in the preceding section: What relations are there between changes in state of psychopathology and in metaphoric verbal behavior over short and long periods of time with variations in the intensity of psychiatric treatment?

The details of our studies will now be given in a few paragraphs. We turn first to the studies summarized in chapter IV.

The pilot study emphasized the critical importance of certain variables such as verbal intelligence, age and sex differences beside clinical

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a general description applicable to all patients. In severe cases in may be possible to make a correct diagnosis even for a psychiatrically informed non-physician. In most cases howewer, it becomes an intricate problem of evaluating symptoms and syndromes as to kind and degree, also evaluating them relative to one another.

If nevertheless trying to say something generally valid about the process of diagnosing, the first requirement to be mentioned is that there must be some verbal contact with the patient. Thought disturbances manifested as incoherence, bizarrness and so on are the key symptoms but must be accompanied by manifestations to a certain degree of what Bleuler calls autism. Of importance are also signs of emotional indifference. These are the main criteria which however must not be considered in isolation but as manifestations of a general splitting of the psychic functions pointing to a pathological change of personality.

Among the accessory symptoms justifying admission to a mental unit can be mentioned: motoric restlessness, hallucinations, confusion, delusions and so on Needless to say, the observations about the *status praesens* must be confirmed by anamnestic data.

grouping (Brattemo 1961). In a special study we examined the effects of variations in intelligence in schizophrenics, both chronic patients and such with a short time of illness (Brattemo 1965b). For comparison the same variables were studied also in groups of normal Ss together with certain non-intellectual personality variables (Brattemo 1967b, Brattemo and Perris 1966).

In all studies reported the complete Dureman and Sälde series of proverbs was used. In two separate studies the differential properties of the proverbs in provocing responses wich are abstract and logically adequate both in the multiple-choice and the free interpretation form were examined in schizophrenic patients. Patients of other diagnostic groups were included for comparison (Brattemo 1967d, 1967e). Responding in the multiple-choice *versus* the free interpretation form has also been compared in several studies (Brattemo 1962a, 1962c, 1962d, 1965a, 1967a, 1967d).

Two studies are specially centered around variations in proverbs interpretations between various diagnostic groups (Brattemo 1962a, 1967a).

In a separate study we controled the possible effects of lobotomi operations in schizophrenics and electroshock treatment in depressives (Brattemo 1962b).

Two studies compared changes in interpretative functions in patients treated with insuline *versus* neuroleptics. Criterion variables in addition to age, verbal intelligence and sex were ratings of ward behavior and symptoms and a global evaluation of the clinical status (Brattemo 1962c, 1965a). In a follow-up study proverbs interpretations were studied in patients who were diagnosed as borderline schizophrenics at admission. For some of them the diagnosis remained borderline schizophrenia, for other patients other psychiatric categories were found more appropriate. These two subgroups were compared both with regard to initial results and with regard to repeated testing (Brattemo 1962d). Changes in proverbs interpretations related to the clinical picture have also been studied in a group of depressives (Brattemo 1967c). As a side line we have studied the pathological effects on interpretative functions of LSD-25 in normal Ss (Brattemo and Lassenius 1963).

In the follow-up study, chapter V, the emphasis is on the alterations in proverbs interpretations over a period of five years. One problem in this connection concerns possible differences between so called clinically improved *versus* unimproved and/or impaired patients. A part of this problem is whether or not patients irrespective of level

of social-psychiatric functioning show a development similar to patients labeled "chronics" from the viewpoint of "thought disturbances". Another problem is the possible differences in proverbs interpretations between patients belonging to different subgroups of schizophrenia both at the onset of illness and after the five years the study continued.

Chapter II

REVIEW OF LITERATURE

The problems of the schizophrenic disease or diseases, of schizophrenic cognitive functions and thought processes as well as of conceptual and abstracting functions as the manipulandum of throught in such states form a large field of inquiry. Arieti (1955), Bellak (1958a), also Östergaard (1962) have surveyed various views of schizophrenic diseases and related questions. The historical development of the research about abstracting functions and concept formation has been traced by Pikas (1965). Payne (1960), Payne and Hewlett (1960), Rabin and King (1958) have reviewed the problems of cognitive deviations in general and particularly thought disturbances in schizophrenic patients.

Against the excellent rewiews mentioned above we do not consider it necessary to give a comprehensive view of this field. Instead we will restrict ourselves to some of the viewpoints relevant to our study.

A. *The concept of schizophrenia*

1. Bleuler's concept

A primary question is that about the concept of schizophrenia, how to delimit the symptoms and how to interpret them. The ultimate startingpoint is naturally Kraepelin's delimitation of those symptoms which he found constituted a psychosis with poor prognosis, which he called dementia praecox. The immediate startingpoint is Bleuler's classical monograph on the subject from 1911 (Bleuler 1950). That work meant a radical revision of the concept of schizophrenia as he renamed the disease. Since then the concept has been a debated and changing one (Arieti 1955).

In Bleuler's definition of schizophrenia are inherent both his idea of the splitting of the personality as the cardinal symptom, and of altered fundamental functions. These altered functions are seen as disturbances of association, affectivity, attention, execution of goal-directed behavior, and as ambivalens and autism. Certain other fundamental functions Bleuler did not find to be altered necessarily, for instance perception, orientation etc. Besides he counted some symptoms as accessory ones, for instance hallucinations, delusions, catatonic symptoms.

The most important among the fundamental symtoms is in the

disturbed associational processes. This applies also to the division into symtoms of primary and secondary ones.

Fundamental symptoms are always present to some extent in every case of schizophrenia, acessory symptoms may or may not be present. From the division into primary and secondary symptoms Bleuler deduces the concept of the disease and at the same time defines these symptoms:

"We assume the presence of a process, which directly produces the primary symptoms; the secondary symptoms are partly psychic functions operating under altered conditions, and partly the results of more or less sucessful attempts at adaptation to the primary disturbances" (Bleuler 1950, pp. 461).

Bleuler retained the Kraepelinian clinical groupings of the patients according to symptoms and labeled the subgroups accordingly as paranoid, catatonic, hebephrenic and schizophrenia simplex. a)

2. Other definitions

Bleuler's concept of schizophrenia has implications which have been much discussed. If all patients on whom the fundamental symptoms are applicable should be considered candidates for schizophrenia this might lead to misdiagnoses (Cooper 1960). Fundamental symtoms can be seen to some extent in many other diseases. The search has therefore been directed toward a concept of "genuine schizophrenia". It has been proposed that the alterations of the fundamental functions should be "very definite". Although the experienced examiner knows what is schizophrenic in the particular patient the fundamental core of the disease seems anyhow to be very hard to express verbally. Still there seems to be a basic agreement among some authorities that there exists something which may be called genuine schizophrenia, since other forms are described as pseudo-schizophrenias (Langfeldt 1953, Ey 1959, Ruemke 1959).

About the content of this genuine schizophrenia Ey (1959) says that it is a chronic delusion with breaking of the communications with others and alteration of the reality. In the same direction goes Langfeldt's distinction (1953) between basic schizophrenic patients with typical symptomatology and bad prognosis, and schizophreniform patients. Among the typical symptoms Langfeldt mentions specially those "which

a) The last group is his own addition.

give expression to a really changed experience of the ego and the external world".

Quite contrary to this restriction of the concept there is especially in American psychiatry a tendency to enlarge the scope of it. Besides the four classical schizophrenic groups one can find several other subclasses, delimited on various grounds: unclassified, schizo-affective, pseudo-neurotic types etc. (Weiner 1958). Attempts have also been made to group the schizophrenics in other ways, for instance Guertin's five type-factors or the process-reactive division (Becker 1959, Guertin 1961).

B. Schizophrenia as a disturbance of central orgainzation.

The problem whether schizophrenia is a homogenous disease has been approached mainly by searching for a single cause, be it psychogenic, organic or biochemical (Bellak 1955, 1958b). In the general discussion during the last years there seems to be a greater awareness that this particular disease has to be looked at multifactorially. One example of this is Arieti's triple aspect of the psychopathology of schizophrenia: "1. The dynamic which will make us understand the origin and subsequent development of the conflict; 2. the formal which will explain what forms the conflict assumes, and the rules to which these forms are subjected; 3. the psychosomatic which will study what functional alterations of the nervous system mediate these psychopathological forms." (Arieti 1959).

Another aspect of the problem is exemplified through the several attempts to integrate the divergent views by using concepts from ego-psychology, often disregarding the traditional psychiatric nosology. In this vein we can see the contribution of Bellak (1955, 1958b) and Davidson (1956) with the implication that the syndrom of schizophrenia is the final result of a number of conditions — chemogenic, histogenic or psychogenic — which lead to a severe disturbance of the ego-functioning. Independent of any conventional psychiatric model Szasz (1957) thinks that schizophrenia represents a particular way of psychological organization with peculiar ego relationships to objects, people and symbols.

Several others have also proposed deficient organization as a useful construct in explaining the schizophrenic phenomena. Singer (1960) for instance says that they represent "inability to keep the psychological field organized, manifested as inability to pay attention to

task requirements and an inability to coordinate messages from various internal systems so that predictable adaptive behavior may result". Schizophrenia has also been viewed as a disturbance of homeostasis resulting from failure of a central integrating mechanism which normally integrates ideational and affective processes and keeps anxiety at a tolerable level (Rosenzweig 1955, Rashkis and Singer 1959).

C. *Disturbances of thinking in schizophrenia*

1. Bleuler's view

Bleuler focused his interest on disturbances of associations. The main characteristic of a normal associational process is its goal-directedness and its hierarchical structure. In contrast the schizophrenic way of thinking is characterized by "loosening of associations". This is manifested in a lot of peculiarities: blocking, perseveration, condensation of associations, abrupt change to irrelevant associational elements, and so on. The common denominator in all this is the predominance of autism, i e. the detachment from the world of "realities" and submersion into the internal world charged with primitive and emotionally determined phantasies. He therefore also talks about "autistic thinking" in which wishes and fears in an undisciplined way determines the content (Bleuler 1950, 1951).

Bleuler's writings on thought disturbances are good reflections of the traditional associationist way of conceiving mental functioning. He gives only a rudiment of theory, however, of these phenomena. Nevertheless, he was the first one to give detailed descriptions of schizophrenic thought aberrations out of which could emanate further research.

2. Various clinical approaches

During the years clinical research about disturbances of thinking has followed several lines, often more or less explicitely anchored in Bleuler's descriptions. Some constructs hypothesized to account for the abnormalities will be outlined in the following.

(a) Dissociation

Among psychiatrists Kretschmer was one of the earliest to develop an experimentally verifiable theory on this matter. He held that schizophrenics were on the abnormal end of a dissociation continuum,

dissociation meaning a tendency for mental activity to occur irrespective of other processes going on. Using tests which Kretschmer devised it has not however been possible to verify his theory. It has also been argued that dissociation as such may be a positive ability (Payne and Hewlett 1960).

(b) Intellectual slowness

From Babcock stems the theory of the extreme intellectual slowness as the essence of schizophrenic thought disorders. In simplified form the idea runs like this: the schizophrenics are so grossly retarded in intellectual speed that they do not have time enough to think through their answers or responses in an ordinary conversation or in a conventional test situation. They therefore respond in more or less random. Studies have on the whole tended to confirm Babcock's theory that psychotics are extremely slow in performance even in intellectual tasks. Through this approach it has not however been possible to differentiate between various psychiatric groups with the exception of chronic schizophrenics (Payne 1960, Payne and Hewlett 1960).

(c) Central disorganization

Rashkis (1947, 1950) has emphasized the construct of disorganization to account for the discrepancy in schizophrenics between actual performance in certain tests and the manner in which they explain their performance. The deficit in organization capacity shows itself in the inability to coordinate or organize simultaneous activities, in this case to behave in accordance with two simultaneous principles, i. e. both perform and give a reasonable explanation of the performance.

Generalizing the idea of disorganization we remember that one effect of the disturbed central organization is impairment of attention to task requirements (Singer 1960). The focusing of the problem of disorganization to that of cognitive control of attention has given rise to some interesting approaches reviewed by Silverman (1964).

In this research attention has been defined in terms of two factors of control, which regulate the utilization of the stimulus input. These factors can be described as scanning of the stimulus field, measured as the intensity of focusing of attention on objects in the stimulus field, and articulation or selecting relevant cues, measured as the selection

of the elements in the stimulus field which exert dominant influence over behavior.

Applied to schizophrenic patients this means that "within the Kraepelinian categorization system, extensive scanning and field articulation responsiveness are associated with the paranoid subtype, whereas minimal scanning and undifferentiated field articulation responsiveness are associated with the catatonic, simple and hebephrenic subtypes" (Silverman 1964). These various ways of attending to the stimulus fields can be seen as defensive maneuvres as has been noted in clinical descriptions (Bleuler 1950, Arieti 1955).

In connecting this approach to the problem of proverbs interpretations we assume two things. We assume firstly that tasks engaging interpretation of verbal material are stimulus fields, secondly that interpretation involves a central organization circumscribed to mainly cognitive control with the emphasis on attention as explicated in the preceding paragraphs. With these assumptions the construct of central organization could mean a relevant contribution to the problem of schizophrenic thought disturbances studied by proverbs.

(d) Formal logics

Behind the construct of central disorganization is the observation of disorganized thought products. Therefore it is quite natural that these have been analyzed in terms of formal logics. Confronting tasks demanding logical reasoning the assumed alogical character of the schizophrenic thinking does not necessarily result in impaired inductive performance, a fact which we have hinted at above (Cashdan 1966, Snelbecker et al. 1966). But the verbalizations are alogical.

This lack of conventional logic has sometimes been identified with the prelogical, primitive thinking in which subjective and objective experience is mixed in an undifferentiated way (Serog 1959). Attempts have also been made to find a distinctive non-Aristotelian system in terms of which this kind of thinking could be characterized. In this way schizophrenic thinking has been said to follow an absurd principle of generalization and to treat all relations as if they were symmetrical (Matte-Blanco 1959). This has generally been described as autistic thinking which is entirely subjective. The distinctive mark of this schizophrenic subjectivity is that it is accepted as reality. The principle according to which this subjective thinking works is said to be the law of von Domarus in which identity is based not upon identical subjects as in ordinary thinking, but on identical pre-

dicates. The schizophrenic thinking is therefore a "retreat of reason" (von Domarus 1946, Arieti 1950, 1955).

Put to experimental test this tendency of schizophrenics to think "paleologically", i.e. to have an overdue amount of syllogistic errors compared to other groups, have not always been verified (Gottesman and Chapman 1960).

(e) Social disarticulation

Partly inherent in the view of schizophrenia as expression of a central disorganization is also the conception of schizophrenic thinking as a kind of social disarticulation. This conception presupposes a parallelism between language and thought, meaning that the verbal behavior is an expression of thought processes, normal or abnormal. The expression was coined originally by Cameron (1946), and referred to the fact that in schizophrenics social communications are gradually substituted by phantasy or autistic thinking which therefore as a consequence of this becomes less and less socially influenced and finally leads to disorganized thinking (Ferreira 1960).

This might mean that the schizophrenic is unable on the cognitive level to manage themes which involve personal relations. They might avoid thought-provocing stimuli with socially toned aspects or respond to them in idiosyncratic or inappropriate ways. They might even perform better in the absence of an experimenter (Whiteman 1956, Ruesch 1959, Fisher 1963).

Attempts have been made to explain in terms of development how this social disarticulation originates. It has been proposed that the disarticulation is a consequence of a general disturbance of the familial interactions in which the schizophrenic as a child was involved. The disturbance is specially severe when involving the child-mother relation but might have dangerous effects too when other important adults are engaged. One consequence of this early disturbance is undersocialization noticeable especially on the level of verbal communications for instance in the form of contradictory communications between the adults and the child. (Ferreira 1960, Bruch and Palombo 1961, Trunell 1965).

3. Abstracting impairment

(a) Concepts and abstractions

In parallel with these mainly clinical approaches we have a line of research which, starting within general phychology, has had a

deep influence on clinical research and theorizing, namely the research on thought mechanisms in terms of concepts and abstractions.

The terms can be said to mean ways of managing "associations", "thoughts", "ideas". Apart from this very general meaning, the words have had various connotations. Sometimes "concepts" and "abstractions" have been used synonymously. On the other hand "concepts" have been regarded as the end result of "abstractions", sometimes as the common responses to differential stimuli. "Abstraction" has also been given various meanings. In some studies it means disregarding the non-essential, and focusing on the essential elements in a stimulus situation. In other studies the meaning is about equivalent to "symbolic", i.e. "representational". The main impression seems to be that both "concepts" and "abstractions" contain a great deal of definitional obscurities (Pikas 1965).

Among important investigators working within this area of research in the beginning of this century Ach and Hull should be mentioned specially. Ach worked with objects of various simple geometrical shapes connected with artificial names, Hull with Chinese characters containing a common element.

When clinical researchers adopted this theoretical framework to psychopathological phenomena they were theoretically and methodologically inspired mainly by Ach. Vigotsky, Luria, Kasanin and Hanfmann, Rapaport, Goldstein and Scheerer used all simple objects to be sorted according to certain principles. The ability to sort they regarded as indicating abstracting ability, in words of Kasanin (1946): "inventing several theories and applying them, testing them to see if they are right or wrong" (Payne 1960, Payne and Hewlett 1960, Östergaard 1962, Pikas 1965).

In the following we will give an outline of two of the earliest interpretations of the results. Although of old date they nevertheless have had a farreaching effect on later research up to date.

(b) Concrete attitude

In studies with brain damaged patients Goldstein and coworkers found a series of abnormalities in the ways in which the patients solved the tasks. They showed impaired abstracting ability. These impaired ways of dealing with the tasks were labeled concrete attitudes.

"The concrete attitude is realistic. In this attitude, we are given over and bound to the immediate experience of the given thing or

situation in its particular uniqueness. Our thinking and acting are directed by the immediate claims made by one particular aspect of the object or situation in the environment" (Goldstein 1946, pp. 18). Goldstein points out that this concrete attitude in which the patients are abnormally governed by the outer-world stimuli effects not only the intellectual sphere but is a basic disturbance in the functioning of the total organism.

In contrast to this the abstract attitude is basic for the ability to assume a mental set voluntarily, to shift between various aspects of a situation, to grasp the essential of a whole, to generalize, to detach the ego fram the outer world (Goldstein 1946, pp. 19).

Moreover it should be mentioned that these evaluations were of a qualitative kind with the problem of dimensionality unsolved. An attempt to quantification together with a third scoring class, functional responses, implying one-dimensionality, was done by Rapaport (Pikas 1965).

Through the works of Vigotsky, Kasanin and Hanfmann and also Luria, these methods and conceptions of thinking disorders were applied to research on schizophrenic patients. These authors too found that at least certain types of schizophrenics showed "a very definite" impairment in "abstract thinking". They functioned concretely. At the same time Kasanin for instance was aware of differences in this respect between schizophrenics and brain damaged patients. The schizophrenics not only are unable to use ordinary principles of categorizations but develop their own very private ones. They vacillate between various aspects of the material, show great variability both intra- and interindividually. Also Goldstein shares this view of the schizophrenic thinking and points out "that we are dealing with intrinsic differences in the concreteness of the schizophrenic and the somatic" (Kasanin 1946, Goldstein 1946).

(c) Overinclusiveness

From his viewpoint that schizophrenic thinking is marked by social disarticulation depending on inadequate roll-taking skills Cameron arrived at an appraisal of the schizophrenic conceptual disability which has generally been labeled overinclusiveness (Cameron 1946).

Cameron worked with verbal material in the form of incomplete sentences. He found that schizophrenics developed peculiar verbal products which were quite particular for them. These peculiarities were not restricted to the responses on verbal material but were seen also

in responses on object sorting tasks. The tasks, both in their details and in their totalities, seemed to take on a private meaning for the patients, something which Kasanin also had noticed. The tasks were interpreted and performed according to these private meanings.

Among these peculiarities overinclusiveness manifests itself in the "remarkable inability (of schizophrenics) to maintain the boundaries of the problem and to restrict their operations within its limits" (Cameron 1946, pp. 56). Closely connected to overinclusiveness are other peculiarities: loose causal connections between the steps taken in solving problems, vague and personalized statements, interpenetration of irrelevant, often personal themes, in the verbal responses, on request numerous generalizations which however are disorganized and ineffectual.

The viewpoints of schizophrenic thinking as overdue concrete and as overdue overinclusive are really at variance. While Cameron says that schizophrenic thinking contains ineffectual generalizations, that the tasks seem to take on a peculiar personal meaning and so on, Goldstein states quite firmly that "these peculiarities of language have erronously been considered as expression of symbolic or metaphoric thinking. ... the observable phenomena are understandable from the point of view that we are dealing with a very concrete form of thinking" (Goldstein 1946, pp. 27, Arieti 1955).

(d) Metaphoric verbal behavior

In the reviewed approaches the experimental materials were objects or colours with or without meaningful or artificial names attached. The task was to make one or several sortings. The material could also be of a general verbal kind, for instance incomplete phrases or words to be defined etc.

Quite another approach was proposed by Benjamin who suggested the use of proverbs, a type of material used earlier in intelligence testing (Benjamin 1946). Benjamin used fourteen proverbs and phrases of increasing difficulties, with variation in ideational content and specificity as to the "concreteness" of the content. The task of the patient was to "interpret", "tell the meaning" in his own words of the proverbs and phrases. In later versions of proverbs series it has been custom to use also multiple-choice forms in which the alternatives express various categories of responses.

Interpreting proverbs does not mean quite the same abstracting activity as sorting objects or even completing sentences (Meadow

et al. 1953). When making interpretations the patients engages himself in metaphoric thought activity. As all verbal metaphors, proverbs can be conceived as "the application of a word or expression that properly belongs to one context to express meaning in a different context because of some real or implied similarity in the referents involved" (Andersen 1964).

Benjamin evaluated the interpretations in ordinary psychiatric terms: bizarrness, incoherence and so on, but also in terms of generalization, abstraction, symbolization. He preferred the concept "literalness" to that of "concreteness". To a certain degree he took the logical adequateness of the responses into account. In later research, however, the conventional terminology abstractness-concreteness is applied to the proverbs interpretations and their logical adequateness is generally overlooked.

A proverb can be handled chiefly in two ways. It can become object for a true interpretation or it can be understood in its literal meaning. Benjamin mentions incidentally transitional forms between these two main approaches. A true interpretation involves "desymbolization", i.e. the words of the proverb must be translated into what they represent and then expressed in various ways by new symbols: specific, general or abstract (Benjamin 1946).

(e) Interpretations of some earlier results

The approach to schizophrenic thought disturbances in terms of concept formation, specially in terms of abstractness-concreteness has given rise to a great amount of research. The material used are ordinarily various sorting tasks or general verbal material (Rabin and King 1958, Payne 1960). Many studies deal also with various types of proverbs series. Gorham (1961) reports that "the technique (proverbs series) has been applied to a variety of problems including verbal impairment associated with psychiatric conditions, LSD, lobotomy, organic damage and simulated high altitude. Development of abstraction in childhood and its decline with old age are being investigated. Some applications are being made in personnel selection."

All findings point to the fact that schizophrenics function abnormally when solving the tasks irrespective of the type of material. Controversies exist however about the nature of the results and by that also about what constitutes schizophrenic thought disturbances. The studies have given many divergent answers.

The oldest and most common answer is that the disturbances

represent a deficit or impairment in conceptual and abstracting functioning. The patients function concretely. This has been the interpretation of the results of various sorting and proverbs material when comparing schizophrenics with normals and with brain damaged patients. The similarity between schizophrenics and organics in the tendency toward concreteness has been taken sometimes to imply a similarity in causation, sometimes as an indication that disintegration of the organism in both states follows the same general rules. Results of general verbal material do not however always substantiate these findings (Goldstein 1946, Kasanin 1946, Gorham 1956a, Elmore and Gorham 1957, Payne 1960, Payne and Hewlett 1960, Reitan 1962).

Another answer is that schizophrenics certainly are impaired in abstracting functions. They are not however necessarily more apt than other psychologically deviant patients to function in a concrete or, in proverbs interpretations, in a literal way. The concrete responses found may to a certain degree be artifacts, i.e. the results of methodological inadequatenesses (Payne 1960, Payne and Hewlett 1960, Carson 1962, Salzman et al. 1966).

This answer actualizes the question if abstracting functions are separable from general intelligence. In earlier studies the authors seemed inclined to treat abstracting activities as constituting a separate factor. Later studies have not been able to confirm this. At most these activities represent the "top" of general intellectual activity. As for proverbs interpretations it has been suggested that they certainly are good measures of abstract functions but cannot be isolated from a general verbal factor. However, this verbal factor may possibly be broken down into subfactors of which one is measured by proverbs interpretations (Gorham 1956b, Pikas 1965, Salzman et al. 1966).

The essence of a third answer is that while brain-damaged patients really do function concretely, schizophrenics are well able to form concepts, to make abstractions, but their concepts and abstractions are "peculiar", "unusual". When they interpret proverbs they do it in a "peculiar" way.

One aspect of this is what Cameron calls overinclusiveness. This means that schizophrenics are abnormally unable to exclude irrelevant aspects in a sorting situation or ideas in interpreting proverbs. The effect is that their responses seem eccentric, "overabstract", less precise or are even misunderstood as concrete. Studies using free association methods, word definitions, card sortings with distractors etc. give support to this conception of the schizophrenic thought disturbances

(Epstein 1953, Meadow et al. 1953, Chapman 1956, Chapman and Taylor 1957, Payne 1960).

In a large-scale study of thought disturbances Payne and Hewlett (1960) factoranalyzed the results of a series of tests, among them proverbs. The tests were used on a variety of psychopathological groups. Among the factors obtained that of overinclusiveness proved to be important.

Another aspect of the "peculiar" responses has to do with the problems of communication. According to this view the schizophrenics are able to form concepts and make abstractions but they do it in an unsocial, autistic way (Whiteman 1956, Lothrop 1961).

The results summarized so far have thus borrowed interpretative concepts from those approaches which we have presented as "clinical". "Clinical" are also some "dynamic" attempts of interpreting thought disturbances. What has been said in previous paragraphs is partly indicative of the fact that abstracting difficulties may occur when the content of the tasks is interpersonally charged, emotionally toned or anxiety provocing. It has been suggested that the literal responses received on metaphoric verbal tasks can be experienced by the patient as the most "safe" responses thus giving him opportunity to avoid anxiety (Meadow et al. 1953, Heath 1956, Richman 1957, Carson 1962, Harkey and Howell 1963, Silverman 1966).

In the same "dynamic" vein are lastly some studies indicating that manipulations on the stimulus side of verbal tasks may have a beneficial influence on the abstracting behavior. The effects have been reported to be moderate to strong. It has been shown that it is generally possible for an experimentor to reinforce verbally certain kinds of verbal responses. The negative or positive interpersonal interactions among the patients before an experiment affect also the abstracting performances in negative and positive direction respectively. Improved abstracting performances have also been found to be an effect of enriched stimulus situations and instructional conditions (Blaufarb 1962, Sarason and Campbell 1962, Hamlin et al. 1965, Little 1966, Silverman 1966). These manipulations make the investigations to a kind of micro-psychotherapeutic situations.

Pointing out some main critical viewpoints we can remind what has been said above that ambiguities, obscurities and difficulties are attached to the terms concepts and abstractions (Pikas 1965). The whole approach of using the abstract-concrete conception, or any other classification hitherto used as a framework for evaluating thought abnorma-

lities, has also been seriously questioned (Östergaard 1962). Payne (1960) and Payne and Hewlett (1960) accept this classification. Nevertheless they say quite squarely that studies using both sorting and proverbs material which indicate that schizophrenics function concretely are less than conclusive or at best ambiguous. A fact which is sometimes overlooked is that thought abnormalities found in schizophrenics can be found also in other groups, even to some degree in normal control groups (Levin 1956, McConaghy 1960, Payne 1960, Brattemo 1962a, Beck 1963, Salzman et al. 1966).

(f) Methodological problems

In the following paragraphs some methodological problems are briefly treated.

First, the dependency of the results on the cognitive and emotiogenic *structure* of the task should be emphasized. Both elementary and complex questions are involved — and often overlooked. The questions are such as: How novel or well known to the subject is the task, how well structured or unstructured, response provocing in any special direction, emotionally loadened or neutral, involving interpersonal relationships, demanding momentary or sustained attention etc.

A second series of questions concern the "schizophrenic" *samples* used. Among the numerous variables to take account of some of the most important are: age, sex, general education and intelligence, length of illness, ongoing treatment, type and development of illness manifested in symptomatology and social maladjustment, absence and presence of concomitant organic brain involvement (Lothrop 1961).

A third series of questions, lastly, are related to the structure and evaluation of the *response variables*. Payne and Hewlett (1960) claim that many performances conceived as concrete are so classified due to inadequate scorings.

Related to our studies we will make some comments on a few of the second series of questions. One finds all too often that the schizophrenic groups used are described only as "schizophrenic" without furter qualifications. When differentiating into subgroups it is possible to receive more relevant results than when working with undifferentiated groups. To Payne and Hewlett (1960) for instance, it seems possible that paranoid patients may give more overinclusive responses than do other subgroups. Sturm (1965), using the process-reactive distinction, found in a study that the process type schizophrenics

were on the whole more concrete in a verbal inclusion test than the reactive patients, while the two groups did not differentiate in overinclusiveness.

In the periphery of this problem area emerge some questions actualized by studies of chemically induced states similar to psychosis. Related to our studies are the conceptualizations of the effects of lysergic acid diethylamide (LSD-25). The whole problem area of LSD is controversial. It seems safe to say that the drug under certain circumstances causes a psychopathological state of unspecific psychotic nature, possibly similar to schizophrenia (Stoll 1947, Freeman 1958, Hoffer 1956). It has been suggested that LSD might act in a disinhibiting way directly or indirectly on the reticular system which normally has a selective, filtering and comparing function on sensory data. This system is of importance also for the proper coding and evaluating activity of the cortex (Marazzi 1962, Cohen 1965, Hoffer 1965, Snyder and Reivich 1966).

Silverstein and Klee (1958) has made a study of abstracting functions under LSD using Gorham's proverbs. The subjects were normals. The result was an increase of abstract wrong answers without increase of concrete ones. This does not agree quite well with Gorham's own results from schizophrenics.

Related to our studies are also the questions of effects of treatments and of brain injury. Repeated studies have shown that brain injured groups tend to perform more concretely than both normals and schizophrenics in a variety of tasks (Elmore and Gorham 1957, Milgram 1959, Reitan 1962, Sturm 1965). Some psychiatric treatment might also have transient or permanent effects similar to organic brain damage. In this context we are specially interested of the performances of previously normal subjevts having suffered brain concussion, and also of the effects of some specific psychiatric treatments, namely insulincoma-, electroshock-, chlorpromazine therapy and lobotomy operations, i.e. both somatic and pharmacological treatments.

Although the area of brain damage is of subsidiary interest in our studies we will still mention some questions which make it problematic. In line with previous discussion it has been pointed out also in this connection that the terms "abstract" and "concrete" denote too broad and ambiguous segments of behavior (Silverstein and Mohan 1963) Beside the methodological factors mentioned above one has to take into account such factors as type and locus of the lesion, its acuteness, and age at the time of the injury (Williams at al. 1959, Balthazar and

Morrison 1961, Fitzhugh et al. 1962, Reitan 1962). Most important is perhaps the ever existing problems of the imprecision and ambiguity of the terms "brain damage" or "cerebral lesion" (Reitan 1962, Smith 1962, Talland 1963). The same remark as for schizophrenic groups is in order in this connection. All too often brain damaged groups are presented without any further specification.

Focusing on our brain damaged group the general view is that unconsciousness after concussion is the effect of disturbances in the diencephalos, possibly the reticular activating system, although diffuse cerebral disturbances cannot be excluded in our group (Ingebrigtsen 1949, Bing 1952).

The somatic treatments mentioned are sometimes considered to have some brain injuring effect, depending of course on a lot of conditions, sometimes as having an unspecific effect in this respect. Regarding changes due to frontal lobotomy and measured with respect to intellectual level and cognitive functions the discussion does not give a very clear picture. Some investigators have found significant changes, others not. This includes also abstracting ability (Rylander 1943, Paul and Greenblatt 1958, Tizard 1958, McReynolds 1959, Slocum 1959, Smith and Kinder 1959).

The same line of reasoning applies to the effects of electroshock treatment (EST) and insulincoma treatment (ICT). Besides the beneficial effects EST may have a temporary organic deteriorating effect. Loreto (1956) reports however that emotional improvement can compensate for this in intellectual tasks. On the other hand Mitsos (1955), Thorpe (1959), Cronholm and Blomquist (1959) report that EST interferes with learning and with retention of verbal material still one week after treatment. Varied and somewhat contradictory are also the reports about effects of ICT. Generally the intellectually impairing effect seems to be less with ICT than with EST. Summarizing, the findings cannot be explained in a monofactorial way nor by an organic theory (Hoch and Pennes 1958a, 1958b).

One of the independent variables in our studies is the effect of chlorpromazine on one of the patient groups. The drug, most known as a major tranquilizer, is in the vocabulary of the psychiatric clinics classified as a neuroleptic agent (Berger 1960). Through numerous studies its therapeutic effects directly or indirectly on various types of schizophrenia is well known. Besides making the patients better organized behaviorally there is at least some agreement that it also might affect hallucinations and delusions to a certain degree, i.e. the disturbing ideational content

(Freeman 1958). Of interest for us is also that it has a depressant effect on the mesodiencephalic reticular structure which in turn causes deficit in the performance of attention demanding tasks (Himwich 1960, Mirsky and Rosvold 1960).

(g) Attention as a construct for interpreting metaphoric verbal activity

In this chapter we have met a lot of descriptive and explanatory constructs. Sturm (1965) has summarized some of the more modern concepts: Epstein's "defect in focusing attention", McReynold's "selective avoidance", Payne's "malfunctioning filter mechanism", Sullivan's "selective inattention", Weckowicz and Blewett's "impaired selectivity", and so on.

When reviewing the psychological constructs most of them seem to be possible to subsume under the broad construct of central or ego organization. Schizophrenics are centrally disorganized, more specifically have disturbances in keeping the psychological field organized i.e. coordinate mental functions (Singer 1960).

Still more specific, schizophrenics suffer generally from impaired attention. Either attention is at a low level or functions inadequately, the cause be found in intrapsychic or in external conditions. "It is as if some 'filter mechanism' cuts out or inhibits the stimuli, both internal or external, which are irrelevant to the task at hand, to allow the most efficient 'processing' of incoming information" (Payne and Hewlett 1960.) This "filter" seems to break down or function inefficiently in schizophrenics with the results that indiscriminative generalization occurs. This can moreover be expressed in terms of cognitive control of attention. In these terms the schizophrenic attention response style is characterized of ineffective scanning and/or field-articulation disposition (Silverman 1964).

Two comments are here in order. First, the filtering might function differentially in various types of schizophrenia. Secondly, whatever furthers the attending to the tasks, exemplified in the mentioned "micro-psychotherapeutic-situation" studies, improves also the responses. Whatever interferes negatively with the attention functions, such as LSD-25 and to some extent chlorpromazine, interferes also with the responses.

Chapter III

METHODS

Beside the main instrument, i.e. the proverbs series, we have used various methods for measuring the critical variables in the studies undertaken. At various stages in the series of studies we have also used various groups of Ss. In this chapter we will present the instruments and groups. Metrical data about the instruments are found in appendix 1.

A. *Instruments*

1. The proverbs series

The series consists of 22 Swedish proverbs which can be supposed to be known to Ss with elementary school education (Dureman and Sälde 1959). It has already been mentioned that the instrument can be used both in a multiple-choice form and a free verbalizing form in which the Ss give their own spontaneous interpretations of the proverbs.

We understand the meaning of the interpretative responses essentially in the same way as Benjamin (1946) but with some terminological modifications. Among other things we understand every verbal response as a kind of interpretation. A proverb can thus be understood and interpreted literally at which the response in essence becomes a restating of the factual content. The proverb can also be understood symbolically, i.e. representationally, at which its factual verbal content is "desymbolized" and translated into its referents, i.e. "resymbolized". The referents lastly are expressed in new symbols.

A response which means that the proverb is understood as a factual statement and nothing more, thus understood completely in its here-and-now-meaning, is called concrete. A response which means that the proverb is understood symbolically is called abstract. The translation into referents is labeled generalization.

The response can also be looked at from the viewpoint of its logicality, i.e. if the proverb, understood in a concrete or abstract way, has been interpreted in a way which is logically adequate to and coherent with its verbal content. Logically adequate responses are labeled "right", inadequate responses "wrong".

(a) The multiple-choice form

In the multiple-choice form there are four response alternatives to each proverb. The alternatives are classified according to abstraction

and logicality in such a way that they can be abstract right (Ar), concrete right (Cr), abstract wrong (Aw) or concrete wrong (Cw). The sums of Ar- and Cr-responses give a total sum of right responses (R) irrespective of their abstraction. Likewise, the sums of Ar- and Aw-responses give a total sum of abstract responses (A) irrespective of their logicality.

As an illustration we give one of the trial samples together with the categorized alternatives:

"Empty barrels are most rattling."

a. Because an empty barrel makes an echo it is more rattling. (Cr)
b. Celebrity is more worth than money. (Aw)
c. An empty barrel is of no value. (Cw)
d. Big words, little man. (Ar)

(b) The free interpretation form

An instrument of the multiple-choice type to which the Ss will give some response on every item will inevitably reduce the degrees of freedom for alternative responses. Its information about the spontaneous response hierarchy of the Ss will therefore be limited. It is moreover a passive interpretative situation with an unknown number of leading and distracting factors built into the instrument. Besides, the small number of alternatives limits the finer response evaluations which maybe are of significance. As a necessary complement the Ss have therefore been urged to give their own spontaneous interpretations of the proverbs.

During the course of studies the interpretations have been evaluated in two different ways with the categorization abstract-concrete and logically adequate-inadequate as starting point (Brattemo 1967d). The evaluations have been made by separate groups of judges. The first evaluation was made with the categorizations of the multiple-choice form as model. In the other one we used intermediary categories of abstract-concrete responses. This means that to the categories of the first evaluation we added categories containing abstract-concrete right (ACr) and wrong (ACw) responses. When it was doubtful whether a response should be considered abstract or concrete it was referred to one of these intermediary groups. The remaining categories were thus made more "pure". a) We have also made an attempt to elaborate the

a) The response categories in this evaluation are thus: Ar, ACr, Cr, Aw, ACw, Cw, A (=Ar+Aw), R (Ar+ACr+Cr).

categories in direction of graded scales but have failed because of lack in reliability (Brattemo 1967d).

In all groups of patients we found a type of responses which could not be evaluated in terms of categories used up to now. Logically they were of a nonsensical type, seemed to be a kind of autistic verbalizations initiated by the proverbs. From the viewpoint of verbal generalization they had a very loose, vague connection with the referents of the proverb or they were condensed expressions of several referents more and more distant from the meaning of the proverb as conceived by the judges. From the viewpoint of generalization they corresponded thus to Cameron's "overinclusive" responses (1946). From the viewpoint of logic they had to be scored as "wrong". a)

A comparison of these responses with corresponding responses of the multiple-choice form shows that depressive patients respond mainly with Cr-alternatives while schizophrenic patients in addition respond with Cw-alternatives (Brattemo 1967d). This could indicate a certain tendency toward concreteness in the Ss, that the nonsense responses really are of a pseudo-abstract kind.

Those proverbs which the patients could not respond to for various reasons constitute a special problem. The general question is about the significance of these "refusals". Do they implicate a temporary inhibition in the motivation to cooperative verbally? Another likely interpretation is that those proverbs generally are more difficult to interpret than those responded to. A third possibility is that absence of response implicates a concrete "shortcircuiting", refusal reaction, connected with anticipated unability to perform the task properly.

A comparison with corresponding responses of the multiple-choice form gives a result similar to what we obtained for the nonsense responses (Brattemo 1967d). Looking at the problem from another angle we scrutinized the distributions of refusals on Ar-provocing and Ar-resistent subscales, a division further elaborated in the following subsection of this chapter. b) We then found that all types of patients had more refusals in the Ar-resistent than in the Ar-provocing subscale (Brattemo 1967d). Connecting these findings with the question of the significance of the refusals it can be said that this type of reaction seems

a) As an illustration of this type of response we give the interpretation of a schizophrenic patient on the previously mentioned item "Empty barrels are most rattling": "The great emptiness is always an awful thing".

b) pp. 34

to indicate a tendency toward concreteness reinforced specially in items "difficult" to interpret.

In the evaluations of the free interpretations nonsense responses and refusals form their own "categories" in the main study, chapter V, but also in certain other studies. [a]

The problem of response similarity emerges when comparing the two forms of the proverbs series. We have correlated the responses of various categories for the Ss of the main group presented in chapter V. The coefficients are found in appendix 1. Because the free interpretations have been scored into more categories than the multiple-choice responses we have a restriction of range in that variable which lowers the figures from statistical reasons. The relationships between the two forms of responses are supposedly stronger than the figures indicate. Nevertheless, the coefficients show that there is a considerable agreement in most categories between the two forms in the interpretations of our patients. The agreement is not higher though, than making it tenable to say that generally the two forms for interpretations represent two different interpretative situations.

(c) Division of the proverbs according to tendency to evoke Ar-interpretations

Both in the multiple-choice and the free interpretation form the proverbs have been divided into two subscales. We started with the observation made over several groups that Ar-responses are more frequent in mentally healthy Ss. We thus divided the proverbs according to their tendency to evoke Ar-interpretations in one Ar-provocing and one Ar-resistive subscale, each consisting of eleven proverbs (Brattemo 1967d, 1967e).

The basis for this division was the proportions of responses of each item in the Ar-category in the following groups: normals (n=30) [b], depressives (n=30), schizophrenics (n=117) [c]. The rank correlation coefficients between the groups computed over the 22 items were high enough to permit pooling of items over the total groups. Having computed the proportions of Ar-responses for this total group we divided, as mentioned, the items into two halves of subscales.

Comparing the proverbs making up each of the subscales in the two forms of interpretations it is worth noticing that in each subscale only

a) Nonsense responses are labeled "N", refusals "O".

b) This group was used only for the multiple-choice form.

c) For further information, see section B of this chapter: "Groups"

about half of the items are identical. As to the effectiveness of the division we found that in various groups the results of the subscales are significantly different from each other almost without exception in all response categories.

(d) Data pertaining to the reliability of the different forms and subscales

A detailed analysis of reliability figures for normals as well as pathological groups is found in appendix 1. Generally the Ar-category in both forms turns out to be the most reliable index of metaphoric functioning. Also in correlational results from free interpretations and the multiple-choice form the Ar-category yields the highest correlation coefficient (r 0.76).

(e) Procedure

The examination with this instrument has proceded in the following way. Each Ss was first given a general instruction as to the aim of the examination, i.e. that he was to be shown a number of proverbs and that he should tell the meaning for each one. He was also told that each proverb could be conceived in various ways but that one explanation was the best one.

The examination then continued with interpretations of two trial samples. The Ss was given a card on which the proverb was printed and told to give his spontaneous interpretation of it. Then he was given another card with four alternatives and told to choose one of them. Both cards were then laying before the Ss. If the interpretation in the free interpreting form and/or in the multiple-choice form was not abstract right the examiner corrected the interpretation by giving an illustration of an abstract right interpretation as a better explanation of the meaning of the proverb.

Then the examination proper with the 22 proverbs began. During this time no attempts were made to correct the Ss.

2. Instruments measuring independent variables

In this section we will shortly describe methods used for establishing independent criterial variables.

(a) Verbal intelligence

The general verbal intelligence level has been evaluated by a synonyme test (Dureman and Sälde 1959). The test consists of 30 items and is of the multiple-choice type. The results are corrected for age and expressed in stanines.

(b) Schizophrenic behavior

Three methods have been used to assess behavior in schizophrenic patients. Two of them are rating scales. The third one is a clinical-psychiatric, global evaluation.

The first instrument is a simplified form of Wing's scale for evaluation of socially passive and active behavior (Wing 1960). The scale is originally intended for rating ward behavior in chronic schizophrenic patients. After trying it on a few patients we found it however applicable to a more acute schizophrenic clientele. It consists of two subscales: A. "Social withdrawal", and B. "Socially embarrassing behavior". The first subscale consists of five items, the second of six. Each item is divided into three scaled steps. Step one means next to normal behavior, step three pathologically deviating behavior. The subscale A thus can vary between five and fifteen rating points, subscale B between six and eighteen.

The evaluations refer to the behavior of the patients in retrospect over the last few days and have been made for each item according to detailed instructions. Raters of hospitalized patients have been orderlies in charge of the wards. Patients examined outside the psychiatric clinics have been rated by a psychiatrist or the author efter consulting the relatives of the patients.

The other rating scale pertains to schizophrenic symptoms. The scale evaluates twenty symptoms, both Bleulerian "fundamental" aud "accessory" ones. As in the behavior scale the ratings are made in three steps for each symptom, step one meaning next to absence of the symptom in question, step three a high degree of symptom intensity.

The rating has been made by a senior psychiatrist. After consultations we have decided to single out seven of the twenty symptoms, namely thinking, autism, hallucinations, delusions, ability to have interpersonal contacts and to take part in therapy work, interest for ward activities, insight of illness. The ratings of the other symptoms seemed to be too difficult and unreliable. The total rating score thus varied from seven to twentyone. In the two rating scales we have used the raw scores.

The third method is a conventional clinical-psychiatric evaluation made by a senior psychiatrist. The assessment was originally made in three steps. The patients were first divided into those improved and those unimproved and/or impaired. Then the improved patients were divided into three subgroups according to a social-psychiatric criterion:

discharge from the hospital and degree to which symptoms were eliminated. The latter division of improved patients did not however differentiate them as to interpretations of proverbs (Brattemo 1965a). In these studies we have therefore limited ourselves to the division into two main groups of psychiatric change, improvement and unimprovement and/or impairment.

The basis for this evaluation can be expressed in terms of flourishing symptoms, general behavior, tendencies toward splitting of psychic functions and personality disintegration. A clinically improved patient is one in whom flourishing symptoms such as autism, anxiety, hallucinations etc. are present to a lesser degree than before if they have not disappeared completely. In his general behavior he is improved as to extent and coordination of motor activity, sleep etc.. The symptoms of splitting have diminished in so far that the behavior generally is more coherent, and adapted to the demands of the environment than before. All this means that the patient generally functions in such an integrated way that he is close to normality in normal interpersonal and social respects and this in such a way that he can be or should have been discharged from the clinics.

It might seem to be a departure from established praxis to use clinical evaluation as a single alternative to rating scales as we have done in chapter V. There are however several reasons for this choice. One is that such an evalution, even if not formalized but made by an experienced psychiatrist, might contain valuable discriminative information which is difficult to catch and standardize in a formalized scale (Hunt and Jones 1962). Another reason is that a more refined method might implicate more discriminations than the material permits. A third reason is that clinical experience always is basic of every psychiatric rating and a guarantee of its validity (Moss et al. 1958, Casey et al. 1960.) The drawback of clinical evaluation is its dependence on this nebulous something called "clinical experience" and its character of being very difficult to communicate as to its content.

(c) Measures of anxiety and neuroticism

In some studies we have touched upon the problem of the relationships between disturbances of interpretations and acute anxiety or neuroticism.

One method used is a Swedish translation of an abreviated version of Taylor's Manifest Anxiety Scale (MAS). Out of the original 50 items this short form consists of 20 items considered to have good discrimi-

natory validity and internal reliability (Bendig 1956, Hoyt and Magoon 1957, Brattemo and Lassenius 1965). At the verbal level the items stress such matters as feelings of unworthiness, of being overwhelmed by troubles, oversensitiveness and so on.

Another method used is the Neuroticism Scale of the Maudsley Personality Inventory (MPI:N) which consists of 24 items. Inspection of the verbal content shows that the various items generally touch upon the same variables as the short form of MAS. Jensen (1958) reports a correlation coefficient of 0.77 between the N-scale and the original MAS. He states that the two scales on the whole measure the same factor.

B. *Groups*

Our material consists of five groups of schizophrenic patients, two groups of depressive patients, one group of patients with traumatic lesions and three groups of normal Ss. Distribution of age, intelligence and basic social-psychiatric data for these groups are found in appendix 2.

1. Schizophrenic patients

The groups of examined patients are presented in order from most to least psychopathological deviations.

a) Group of chronic schizophrenic female patients (n=30) (labeled Sch_{chr}). 21 of them had been admitted to the psychiatric clinics before 1950. At the time of the examination most of the patients had small optimal dosages of neuroleptics and had been so medicated during at least half a year. On an average of 10 years earlier 15 patients had been lobotomized (Brattemo 1962a).

b) Group of schizophrenic female patients with a short time of hospitalization (n=30) (labeled Sch_{sh}). This group is different from the first one in that the patients had rather flourishing symptoms. Besides, most of the patients had fallen ill during the last years. [a] At the time of examination most patients were treated with neuroleptics, 7 of them had received electroshock treatment (Brattemo 1962a).

c) Group of schizophrenic male patients treated with insulincoma (n=15) (labeled In). 10 patients were diagnosed as genuine schizophrenics. The others had such schizophrenic symptoms that insulincoma

a) 24 patients were admitted to the clinics for the first time during the years 1955—1960.

treatment was indicated. 12 patients were admitted for the first time during the years 1960—1961. The group was examined twice. At the first examination 10 patients were receiving insulin in small dosages, some were also medicated in other ways. At the second examination, after an average of 53 days, some patients were still treated with neuroleptics. During the time between examinations all patients had received dosages of insulin of maximally 350 units (Brattemo 1962c).

d) Group of schizophrenic female patients for whom there was reason to suspect a diagnosis of schizophrenia or features of that illness at the time of admission (n=25) (labeled Sch?). At the final diagnosing made at the second psychological examination the diagnoses were: schizophrenia in 2 cases, borderline schizophrenia in 12 cases and other diagnoses in 11 cases. 22 of the patients had been admitted for the first time during 1955—1960. The group was examined twice with an average interval of 25 days. Between examinations most patients were treated with neuroleptics.

Suspicion of schizophrenia was founded on the presence of several signs: that the general development of the patients during several years was similar to that of schizophrenics, that they showed fundamental symptoms as disturbances in thinking, affective rigidity, difficulties in personal contacts possibly in addition to certain accessory symptoms. Common to all patients in this group was that the signs of schizophrenia were so vague that the head psychiatrist was in doubt as to the final diagnosis of schizophrenia (Brattemo 1962d).

e) Group of schizophrenic male patients treated exlusively with neuroleptics, primarily chlorpromazine (n=42) (labeled Neur). The patients in this group were either admitted for the first time or readmitted from discharge on parole in case of marked impairment. All patients had been without active psychiatric treatment during considerable time before admission. The group was examined at three times. The first examination was performed immediately after admission before any treatment was initiated. The second examination was made after an average of 43 days in close connection with the discharge from the clinics. The third examination finally was performed after approximately five years. The results for this group are presented in details in chapter V and appendix 3 (Brattemo 1962c, 1965a).

In two studies we have put together schizophrenic patients from previous groups with a short time of hospitalization and illness into one group (n=87) (labeled Sch) (Brattemo 1967d, 1967e). These studies centered among other things around the question of time of hospitaliza-

tion. The group consists of the three groups: Sch_{sh} (n=30), In (n=15), Neur (n=42). For the last two groups we have used the results from the first examinations before the patients had started psychiatric treatment.

In all the schizophrenic groups are made up of 142 patients.

2. Depressive patients

a) Group of depressive female patients (n=30) (labeled D_1). The diagnoses were distributed evenly over manic-*depressive* psychosis, depressive psychosis and depressive state of primarily neurotic type. 24 of the patients were admitted for the first time during 1955—1960. At the time of the examination 13 patients had no treatment. Most of the others were treated with antidepressive agents, a few had neuroleptics in addition. 18 patients had received electroshock treatment during their stay in the clinics (Brattemo 1962a, 1962b).

b) Group of depressive female and male patients (n=21) (labeled D_2). 2 patients were diagnosed as involutional depressives, the others as depressive psychoses or depressive states of neurotic type. 13 patients were admitted for the first time, 6 patients had been admitted between one and three times. The group was examined twice. 11 patients were examined for the first time within 4 days after admission, the others between 6 to 61 days after admission. The second examination was performed after an average of 26 days. Between the examinations the patients were treated with antidepressive agents, primarily protriptylinechloride. For the 11 patients examined within 4 days this was the only treatment (Brattemo 1967c).

In both groups the depressive state was characterized by slight to deep lowering of the mood and also by no to moderate intellectual and motor inhibition. The two groups totaled n=51.

3. Brain damaged patients

Group of male patients who had suffered concussion (n=33) (labeled BD). The criteria for inclusion into this group were that the patients should have become unconscious in connection with a concussion to the brain. The time of unconsciousness was of rather short duration. An additional criterion was that the patients should have no previous history of psychiatric illness. One part of the group, (n=15), admitted to the Department of Surgery, was examined within

two weeks after the injury. Another part, (n=18), consisted of patients admitted to the psychiatric clinics for psychiatric check-up in connection with such head injury. They were examined within one year after the injury. Some of the patients, (n=11), had suffered concussion complicated with basal cranial fracture but with no blood in liquor. The rest of them, (n=22), had suffered an uncomplicated concussion (Brattemo 1967a).

4. Normal subjects

a) Group of normal Ss, males and females, well adjusted social-psychologically and with no known medical or psychiatric history of illness (n=151) (labeled N). They were divided into three age groups: a_1) 14—16 years (n=41), students in the last two grades, 8—9, in a primary school, preparing for entering a secondary school. [a]
a_2) 19—29 years (n=62), students in professional school for nurses or for attendants at mental units or studying at highschools for adults.
a_3) 30—55 years (n=48), students in supplementary schools for trade and craft school teachers or for directors of old people's home. They had previously been employed without having had formal competence (Brattemo 1967b).

a_2+a_3) Combined normal group from a_2 and a_3 consisting of female Ss (n=30) (labeled N_a). The Ss were students at a professional school for nurses and future directors of old people's home (Brattemo 1962a).

b) Group used in studying the relation between the interpretation of proverbs and score in the MPI:N-scale (n=26) (labeled N_d). The group consisted of boys admitted to a State reformatory school from autumn 1964 till spring 1965 because of delinquent behavior. None of the boys were psychopathologically deviant to such an extent that they required psychiatric treatment. It could not be excluded however, that some of the boys had suffered slight traumatic head injury, for instance in car accidents (Brattemo and Perris 1966).

c) Group for studying the effects of Lysergic acid diethylamide (LSD-25) on interpretations of proverbs (n=13) (labeled N_{LSD}). The group consisted of 6 females and 7 males; 10 of them belonged to the staff of the clinics, 3 were patients with slight psychoneurotic symptoms (Brattemo and Lassenius 1963).

Altogether the number of normal Ss is n=190. Adding all patients

a) Equivalent to high school in the school system of U.S.A.

and normal Ss together we have examined a total of n=416 cases. When groups have been examined at two or more times this has been specified in the text. The other groups have been examined only on one occasion.

C. *Statistics*

The statistics used for testing the significances of differences are non-parametric (Siegel 1956). We have accepted H_0 if $p > 0.05$.

Chapter IV

REVIEW OF STUDIES ALREADY PUBLISHED

A. *Influence of verbal intelligence, age, sex and anxiety-neuroticism*

1. Verbal intelligence, age and sex

As seen in table 1 the correlations between proverbs interpretations of the multiple-choice form and verbal intelligence from the synonymous test is rather high in the normal group, especially for the category Cr. Comparing these correlations with those obtained for a chronic schizophrenic group it can be seen that for the latter group most correlations are much lower, only two, the ones with Ar and Aw, being significant at the 5% and 1% level. The regression lines are roughly linear, but as the Ss approach the upper levels of word knowledge the lines flatten out. When dividing the proverbs responses on groups of high and low verbal intelligence levels the differences in most of the categories of interpretations are significant [a] (Brattemo 1962a, 1962c, 1965b, 1967a, 1967b).

As to age it can be seen that some correlations found in the normal groups are significant whereas none correlation is significant for the schizophrenic group. As to the normal group the increasing difficulty in giving Ar-responses is seen in the low negative correlation, —0.21. The positive correlations between age and categories Aw and Cw probably mean that difficulties in giving Ar-responses have counterparts in increased tendencies to give Aw and Cw responses with increasing age. A similar but weaker trend for Cr- and Aw-responses is seen in the correlations listed from the schizophrenic group. It should also be mentioned that the relationship over age is somewhat curvilinear in most categories (Brattemo 1967b).

Among the subgroups the interpreting ability is most fully developed in the middle age group, 19—29 years. Compared with this subgroup there is a decline in interpreting functioning in the oldest group. Nevertheless, this group (30—55 years) functions somewhat better than the youngest one (14—16 years). The differences are most noticeable in the categories Ar and Cw (Brattemo 1967b).

Dureman and Sälde (1959) state that in their groups they have

a) High verbal intelligence = stanine $\geq$ 5, low verbal intelligence = stanine $\leq$ 4.

not found significant sex differences in the proverbs series. This is of theoretical interest when considering that girls in elementary school classes generally excell in verbal ability over boys. The authors report however figures only for the Ar-category.

In the youngest age group reported above we have obtained similar results (Brattemo 1967b). This with the modification that the girls more than the boys tended to give Ar and Aw responses. In the middle and the oldest age groups we found the usual pattern. Men gave more Ar responses than women. In the oldest group the differences were significant in the favor of men.

The possibility of sex differences in older people can therefore not be excluded in the Ar-category.

	Verbal intelligence		Age	
	Normals	Sch_{chr}	Normals	Sch_{chr}
Ar	0.61 ($p<0.01$)	0.37 ($p=0.05$)	—0.21 ($p=0.05$)	0.09
Cr	0.81 ($p<0.01$)	0.29	0.02	—0.29
Aw	—0.02	—0.52 ($p=0.01$)	0.36 ($p=0.01$)	0.24
Cw	—0.62 ($p<0.01$)	—0.24	0.23 ($p=0.05$)	0.03

Table 1. Correlation coefficients between categories of interpretations and verbal intelligence and age in groups of normals (age 30—55 years, n=48, see pp. 41) and chronic schizophrenics (Sch_{chr} n=30, see pp. 38).

2. Anxiety and neuroticism

In a normal group of adult Ss we used the short form of Taylor's MAS. In another group of boys, aged 14—17 years, from a reformatory school, we used the MPI:N-scale. In both groups the Ss responded to the multiple-choice form of the proverbs series.

In table 2 it can be seen that correlations obtained from the boys in the reformatory school show that MPI:N is negatively correlated with frequency of Ar-responses. The correlation between MPI:N and frequency of Cr-responses is positive. This probably means that decreased Ar-tendency with high neuroticism goes together with an increased tendency to give Cr-responses in this particular group. As to the normal adult group which was given the MAS questionair only two correlations were found to be significant, These correlations seem to show that with increased MAS score there is a tendency to

give less Cr responses and more Aw responses (Brattemo and Perris 1966, Brattemo 1967b). The tendency for high MAS score to go together with low Cr-frequency also holds for the brain damaged group (Brattemo 1967c).

A division of the normal adult Ss into extreme groups with reference to anxiety gave as result that the high anxiety subgroup responded with more logically inadequate choices than the low anxiety subgroup. None of the differences were significant however (Brattemo 1967b).

It is a common clinical observation that anxiety is a striking symptom in both depressive and head injured patients. Table 3 also shows that the average anxiety level is higher in the brain damaged group than in the normal group. In the group of depressive patients the average anxiety level was however somewhat lower than in the normal group. It would be reasonable to assume that anxiety should have a greater differentiating effect on the interpreting activity in the brain damaged group than in the group of normal Ss. As for the depressive group we would not exclude the possibility of such an effect. We have not

	MAS		MPI:N
	Normals	Brain damaged group	Group of delinquent boys
Ar	—0.12	—0.19	—0.37 ($p=0.05$)
Cr	—0.28 ($p=0.01$)	—0.22	0.42 ($p=0.03$)
Aw	0.22 ($p=0.01$)	0.12	—0.25
Cw	0.07	—0.08	0.20

Table 2. Correlation coefficients between categories of interpretations and scores on MAS and MPI:N in groups of normals (age 30—55 years, n=48, see pp. 41), brain damaged patients (n=33, see pp. 40), and delinquent boys (N_d n=26, see pp. 41)

	MAS	
	M	SD
N	4.78	2.01
BD	5.89	3.35
D_2	3.95	1.36

Table 3. Means and standarddeviations for scores on MAS expressed in stanines for groups N (age 30—55 years, n=48, see pp. 41), BD (n=33, see pp. 40) and D_2 (n=21, see pp. 40).

however, been able to prove this expectation, at least not for the multiple-choice form (Brattemo 1967a, 1967c).

In applying the free interpreting form together with the MAS questionair for repeated testing in the depressive group, referred to in the preceding paragraph, undergoing therapy with protriptyline during an average of 26 days it was found that a subgroup who had substantial reduction in subjective anxiety level also showed a reduction in refusals. At the same time reduction in subjective anxiety level was positively related to increase primarily in Ar-responses (r_s 0.45) but also in Cw-responses (r_s 0.43). Looking at the individual results the probable implication is that a moderate reduction in subjective anxiety level gives an increase in Ar-responses whereas a stronger reduction to the point of drowsiness on the other hand might increase the tendency toward Cw- and to some extent Cr-responses.

The subgroups are small however and the differences between them at the time of the first examination as to metaphoric ability was considerable. Besides, the subgroups differed in verbal intelligence. The results from the subgroups of depressive patients must therefore be interpreted with cautiousness (Brattemo 1967c).

B. *Comparing interpretations between different administrative forms*

This section describes variations of interpretations depending on the construction of proverbs series.

1. Multiple-choice *versus* free interpretations

Compared with the multiple-choice form the differences between various groups obtained with the free interpretation form are numerically larger. Because of the greater heterogeneity within the groups however the free interpretation form despite large numerical group differences does not always give statistically significant results.

It can generally be said that the more the groups deviate clinically the more they deviate from the normal interpretation pattern. However, a comparison between the two forms of responding shows that the Ss constantly give somewhat more Ar-responses in the free interpretation form. Besides, in the latter form, schizophrenics constantly give more Cw-responses being most accentuated in the psychiatrically improved group. In the free interpretation form the characteristic schizophrenic way of functioning is more dramatically displayed than in the multiple-

choice form. Within the same groups, from test to retest, the Cw-responses decrease in amount much more than in the multiple-choice form.

These viewpoints are valid for those groups in which the evaluations of the free interpretations have been made on the model of the multiple-choice form, in other words when the two forms are comparable (Brattemo 1962a, 1962c, 1962d, 1965a, 1967a, 1967d). In these groups we have excluded patients who have refused to respond on four or more items. For patients who have fewer than four refusals we have treated these refusals as Cw-responses in order to make the two forms optimally comparable.

2. Ar-provocing *versus* Ar-resistent items

Compared with the complete series of proverbs the Ar-provocing subscale in its multiple-choice form increases group differences both in respect to ability to produce Ar-responses and unability to avoid Cw-responses, which is characteristic especially for the chronic schizophrenic group. Moreover, in this subscale the chronic group yields an increased tendency to concrete responses.

In the Introduction, chapter I, we pointed to the high Cr-tendency shown in the depressive group. This feature disappears in the Ar-provocing subscale but reappears in the Ar-resistent subscale even stronger than in the total scale. The Ar-resistent subscale does not give any more additional substantial information compared to the total scale.

A comparison between the total scale and the subscales in their free interpretation forms gives on the whole similar results as those obtained with the multiple-choice form.

Summary

The most striking result of our studies of the critical independent variables is the importance of verbal intelligence in performing metaphoric tasks in normal Ss over the age ranges examined. From normal groups to the more disturbed patients this importance of verbal intelligence seems to be considerably reduced. But again age seems to play relatively lesser role as an underlying factor in the disturbed schizophrenic patients.

Variations on the stimulus side are also of importance in increasing group differences and showing the distinct mark of certain groups.

C. *Differences in response patterning between and within various diagnostic groups*

1. Variations between different diagnostic groups

In the studies which are to be reviewed the groups or subgroups are matched for age and verbal intelligence, in most cases by pairwise matching. With the exception of two groups the Ss are either men or women. Descriptions of the groups are found in chapter III, section B. When reporting about the proverbs series without further qualification we refer to the total scale, on the same conditions the free interpretation form refers to the evaluation of the responses on the model of the multiple-choice form.

a) Schizophrenics *versus* depressives and normals

We start with a study comparing the results of schizophrenics, depressives and normals. The total schizophrenic group was subdivided into subgroups of acutely ill [a] *versus* chronically ill patients (Brattemo 1962a). The mean age in both groups was about 40 years. The intelligence level varied between stanines 4.5—5.2 with the exception of the chronic group for which the figure was 3.9. This does not affect the result seriously however, because of the low correlation for this group between level of interpretation to intelligence and age. The patients were examined with both forms of the proverbs. Several reasons made it practically impossible to have the normal Ss respond in the free interpretation form. We have therefore results for normals only on the multiple-choice form. [b]

In the results obtained we can discern a pattern which is characteristic and which returns also in other studies. In normal Ss the Ar-interpretations predominate. Normals are also characterized by the small number of Cr- and Cw-responses. In total this means a pronounced tendency toward A-interpretations, a tendency strong enough to include Aw-answers. Lastly, the tendency of normals on the whole to give adequate answers shall be pointed out.

The depressive group is characterized by the Cr-responses, to a certain degree also by Cw-responses, which gives it a certain similarity

a) The concept of "acutely ill schizophrenics" is not entirely adequate. In the present context, however, it is used as a synonyme for a state of acute exacerbation of schizophrenic symptoms both in patients admitted for the first time and those readmitted.

with the acutely ill scihzophrenic group [c] though with two important exceptions. The exceptions are the fewer Aw-responses and the overweight of adequate responses in the depressive group. The amount of adequate responses puts the depressive group on par with the normal group. Our conclusions are strengthened by the initial results of another depressive group [d] (Brattemo 1967c).

Compared with all other groups the chronic schizophrenic group is the most deviating one. It is moderately deviating compared with the groups Sch_{sh} and D_1, strongly deviating compared with the normal group. The distinct pattern of this group is the low number of Ar-responses, the high number of Cw-responses, the general predominance of concrete and inadequate responses.

Thus far the comparison applies to the results of the multiple-choice form. The results of the free interpretation form strengthen the obtained pattern of the chronic group and differentiates the depressive group in normalizing direction from the group Sch_{sh}.

Pooling all acutely ill schizophrenic patients does not result in any substantial changes in the distribution of responses on the various categories of the multiple-choice form compared with the group Sch_{sh} (Brattemo 1967d).

We have also studied the results of the free interpreting responses evaluated to give intermediary categories of abstract-concrete responses in addition to refusals and nonsense responses. The groups were the same as before, the schizophrenic group the pooled one. The results is still that the chronic patients are most deviating. Ranked in order of deviation the groups are: chronic schizophrenics, acutely ill schizophrenics and depressives. Adding the tendencis to refusal and nonsense responses to this analysis it was seen that depressive as compared to schizophrenic groups had much lower frequency of these two categories. From the results of comparing schizophrenics with depressives it is clear that the latter give more adequate responses particularly in the direction of more Cr-responses (Brattemo 1967e).

(b) Follow-up studies of effects of somatic treatments

In one study we have payed attention to effects of lobotomy operations and electroshock treatment (Brattemo 1962b). At the outset we

b) The groups referred to are: Sch_{sh}, Sch_{chr}, D_1, N_a
c) Sch_{sh}.
d) D_2

found it probable that these treatments could affect the interpretations in a way mimicing cerebral insult and therefore could change the interpretations toward a more concrete pattern (Elmore and Gorham 1957).

Out of a group of 15 lobotomized chronic schizophrenics 14 were matched for age and intelligence with the same number of not lobotomized patients. Likewise 13 out of 18 electroshock treated depressives were matched with the same number of depressives not treated in that way. All patients were women. The possibility of differences as to degree of pathology between the subgroups could of course not be completely excluded. The clinical data obtained from the patients made us decide to consider the groups as roughly equivalent in terms of clinical status. The multiple-choice form of the proverbs was used.

The results showed that the lobotomized group functioned in a poorer way than the patients in the pharmaca-treated comparison group. The number of concrete responses, especially Cw-responses, was greater at the cost of Ar-responses. The electroshock treated group had overweight of both Cr- and Cw-responses. The differences between the variously treated groups and the comparison groups were however small. The only significant difference was in the Cw-category of the lobotomized group, i.e. the category which we have found to be characteristic of the chronic schizophrenic group in general.

Summing up it may be said that the treatments do not to any high degree give radical distortions of the abstracting functions operating in proverbs interpretations. The somatically treated subgroups seem more or less to be atypical representatives of their own groups.

(c) Effects of brain damage on metaphoric activity

In the study to be reviewed the main group consisted of patients suffering from after-effects of commotio cerebri. For comparison was included a group of acute schizophrenics which consisted of patients treated with neuroleptics and matched with the main group (Neur). For this latter group we used the results from the initial examination, i. e. the period before treatment was initiated. For additional comparisons the study also included chronic schizophrenics, depressives and normals (Brattemo 1967a).

The group varied in two potentially essential respects, namely acuteness and severity of injury. The more acute and the more severe the injury was the more we obtained decrease of the amount of abstract and increase of the amount of concrete responses within the total group of logically adequate responses. The differences obtained

within the brain damaged group however were numerically small and non-significant.

Comparing the brain damaged group with the other groups in the multiple-choice form gives as result that the brain damaged group in its pattern of responding can be placed rather near the depressive group in a hypothetical continuum: chronic schizophrenics — acutely ill schizophrenics — depressives — normals. This holds in particular for Cw-responses, and the total sum of adequate responses which are two variables distinguishing particularly chronic schizophrenic from not schizophrenic groups. On the other hand there are some similarities between the brain damaged group and the acute schizophrenic group. Still the main point is that the brain damaged group equally to the depression group has a high proportion of Cr-responses.

In the free interpretation form the brain damaged group was found to function in a quite normal way as compared with the other abnormal groups. This is most observable in the Ar-category. The group has however its own peculiar character compared with other groups which is the great amount of refusals (40%). What has been said before applies also in this context, that these refusals can be understood as a kind of shortcircuiting in interpreting situations experienced as difficult, i.e. concrete reactions. Provided all patients had responded to all items it is therfore possible that the pattern of interpretations had been more similar to that of the depression group also in this form of interpretations. In passing it can be mentioned that the reasons which the patients expressed for the refusals were that they were tired of thinking, felt confused and so on, i.e. a form of asthenic syndrom.

(d) Comparisons of influence of verbal intelligence on interpreting behavior in different diagnostic groups.

We have previously pointed to the interaction of age and verbal intelligence as a source of variation in interpretations of proverbs. We can now point to the interaction of group and verbal intelligence as another important source of variation (Brattemo 1965b, 1967a).

When dividing schizophrenic, brain damaged and normal Ss into high and low verbal intelligence subgroups we found that the differences in interpretations were most accentuated between high verbal intelligence subgroups singled out for comparison from brain damaged and normal groups. Brain damaged and normal Ss were thus most similar to each other at the low intelligence level.

Taking high and low verbal intelligence subgroups of schizophrenics

into the comparison the brain damaged group places itself as to metaphoric activity between the schizophrenic and normal groups. Furthermore, the metaphoric activity in the low verbal intelligence subgroup of brain damaged patients is most negatively affected by the injury. This subgroup is thereby very similar to the chronic schizophrenic group.

2. Variations within the schizophrenic groups

The studies up to now have been comparisons of the verbal interpretating pattern of schizophrenic patients with those found in other groups. This part is a review of studies centered around a series of specific questions concerning subdivisions of the schizophrenic groups.

1) How does the interpretating pattern change in patients clinically improved by active treatment? 2) How does the pattern of interpretation change in patients in whom the syndrom indicating the possibility of schizophrenia is changed in such a way that another diagnosis is more appropriate compared to those patients which develop a fullfledged schizophrenic picture? A complementary study, 3), deals with the patterning of change in normals under the influence of LSD-25.

(a) Changes in patterns of interpretations compared between improved and impaired groups.

The studies answering question one above includes two groups of patients, one treated with insulincoma and one with neuroleptics (Brattemo 1962c, 1965a).

After treatment both groups were improved clinically but to different degrees. In metaphoric activity both groups also functioned more like normal groups. This holds for both forms of proverbs interpretations. The changes are however different in the two groups. In the insulin group we found a marked increase of Ar-responses together with decrease of Cr-responses, and an increase of the total sum of adequate and abstract responses. In the neuroleptic group we found a much smaller increase of Ar-responses together with a moderate increase of Cr-responses, decrease of Cw-responses, increase of the total sum of adequate responses and finally status quo for abstract responses taken together.

In these metaphoric changes training effects may be of some importance. To penetrate further these effects we divided the patients in

each treatment group into subgroups according to behavior, symptom and clinical criteria for estimating degree of improvement. We thus obtained groups of patients considered improved and unimproved and/or impaired. It was hypothesized that those patients improved should benefit more from previous administration of the proverbs than the others.

As expected the changes are different for the groups. Adding together the results from the two proverbs forms we found that in the improved insulin group the changes mainly consist of increase of Ar-responses together with a decrease of the Cr-responses. When comparing the subgroups of the neuroleptic patients we found another pattern of change of interpretations which did not relate to the form of the proverbs series. Neither did it relate to the criteria of improvement. While the Ar-responses increase only to a minimal extent in the improved group the Cr-responses increase markedly, whereas the Cw-responses show a tendency to decrease. The total result of this is that sum of R-responses tend to increase.

In the improved neuroleptic group we have thus found tendencies toward increased concrete response frequency from test to retest. In the insulin group we have found a tendency toward increased abstract response frequency. Both tendencies are above all within the category of adequate responses.

We have, however, to remember, that the two groups are not quite comparable. In addition to type of treatment they also differ in verbal intelligence. Some additional information with regard to the impact of verbal intelligence we could get by comparing a neuroleptic subgroup with high verbal intelligence with the former insulin group (Brattemo 1965b). In that neuroleptic subgroup the number of adequate responses have increased only sligthly and the increase is within the Ar-category. The Cr-category is unchanged unlike the insulin group in which the frequency of responses in this category has decreased. Turning again to the low intelligence neuroleptic subgroup we found this group to give the most articulate changes in the direction toward concreteness.

Thus the differences remain between the two treatment groups. No doubt there is a tendency independent of verbal intelligence in the neuroleptic group toward concreteness as result of neuroleptic treatment. We have pointed out in the review of literature (pp. 29) that the mechanism of the mode of action of the hypoglycemiaproducing insulin coma treatment is essentially unknow. But it is worth noticing that

while in the insulin group the active agent is gradually eliminated from the body of the patients at the second examination the patients of the other group still were medicated with neuroleptics and remained so during the years till the third examination. The concreteness tendencies of the neuroleptic group might thus be a combined effect of the schizophrenic illness per se though in a state of at least symptomatic recovery and motivational/emotional indifference induced by the drug.

For comparison we can report on a study about changes of interpretations in depressive patients undergoing treatment mainly with protriptyline (Brattemo 1967c). As mentioned before depressive patients have a tendency to give a high frequency of Cr-responses.

In the multiple-choice form the subgroup of clinically improved patients are metaphorically improved only slightly. In the free interpretation form this subgroup is much more inclined to respond to more items than the clinically impaired subgroup. The increase benefits the Ar-category. The change resembles most that one we found in the insulin group in spite of the fact that the depressives were less verbally intelligent.

(b) Patterns of changes in interpretations of acute borderline schizophrenics with clinical symptoms developing in different directions

The study in the preceding part of this chapter referred to clearly schizophrenic patients who were improved in connection with active psychiatric therapy. The present study refers to patients who at the admission were classified as borderline schizophrenics but for whom the diagnosis was changed because of the psychopathological development.

The group consisted of female patients, n=25. After about one month the diagnosis was changed for 11 of them to manic depressive psychosis or depressive neurotic state, for 2 of the patients to schizophrenia. The remaning 12 patients retained the diagnosis borderline schizophrenia (Brattemo 1962d).

We compared the rediagnosed subgroup of 11 patients changing to manic-depressive psychosis or depressive neurotic state with other groups, schizophrenic and not schizophrenic. The result was that the rediagnosed subgroup at the time of the first examination had obvious similarities with the acutely ill schizophrenic group (Sch_{sh}). At the time of rediagnosing, when the subgroup was also reexamined with the proverbs, it had changed markedly in the direction of normality in its interpretations as deduced from strong increase in Ar-responses and

decrease in inadequate responses. Such changes were not seen in the group wich retained its diagnosis of schizophrenia. This holds for both proverbs forms. The conclusion therefore is that the interpreting behavior of borderline schizophrenics is most similar to that of "genuine" schizophrenics, but that patients whose psychiatric status develops away from borderline schizophrenia also change in interpreting functions to more similarity with normal Ss.

(c) Changes in interpretations in normals under the influence of LSD-25.

Half of the group in this study, (Brattemo and Lassenius 1963), n=6, was examined during normal state before the LSD-session, the other half, n=7, about a week later when the psychological effects of LSD had disappeared. During the LSD-session each Ss was examined 2—3 hours after injection of 70—90 gamma LSD subcutaneously.

The change from normal to LSD-state can shortly be expressed in the following way. The Ss are strongly impaired in the Ar-category, the tendencies to give Cr-responses increase as do the tendencies to give Aw- and Cw-responses. The last two types of responses increase significantly. Together this means a decrease of the number of adequate responses.

The results of the examination in the normal state agree with those from a verbally high intelligent normal group. In LSD state the group resembles to a certain degree an acutely ill schizophrenic group of equivalent verbal intelligence. It resembles however still more a verbally intelligent brain damaged group but with features of normal functions as seen for instance in the high number of Ar- and the low number of Cw-responses.

Summary

The last section of this chapter will now be summarized. The summary concerns differences in metaphoric verbal behavior between various diagnostic groups, differences of change within groups in metaphoric behavior connected with treatment or with change in psychiatric status and the prognostic use of such behavior as indicator of effects of treatment.

(a) Differences between diagnostic groups

Table 4 summarizes the results of initial interpretations in various groups. The figures are quotients between relative frequencies of various categories of interpretations. To make an attempt at testing

Quotients		Sch_{chr} n=30	Sch n=87	BD n=33	D_1 n=30	N n=48	N_{LSD} n=13	
Cw/Ar	HVI	0.60	0.27	0.17	—	0.06	0.08	Multiple-choice form
	LVI	1.05	1.14	0.77	—	0.31	—	
	Total group	0.88	0.47	0.37	0.50	0.15	—	
Cw/Cr	HVI	0.41	0.30	0.23	—	0.26	0.12	
	LVI	0.69	0.54	0.43	—	0.58	—	
	Total group	0.58	0.44	0.34	0.35	0.44	—	
Aw/Ar	HVI	0.31	0.34	0.27	—	0.47	0.22	
	LVI	0.87	0.86	0.47	—	0.24	—	
	Total group	0.65	0.43	0.34	0.33	0.32	—	
Cw/Ar	Total group	0.66	0.29	0.29	0.32	—	—	Free interpretation form
Cw/Cr	- „ -	0.93	1.09	0.78	0.86	—	—	
Aw/Ar	- „ -	0.31	0.21	0.24	0.32	—	—	

N=normal Ss, 30—55 years, pp. 41
HVI=subgroup of Ss of high verbal intelligence
LVI=subgroup of Ss of low verbal intelligence

Table 4. Quotients between relative frequencies of the categories Cw/Ar, Cw/Cr and Aw/Ar, initial responses, in multiple-choice and free interpretation forms.

the differentiating power of the quotients we have used the small sample method to test the significance of the difference in the multiple-choice form between the quotients Cw/Ar in the chronic schizophrenic group (0.88) and the initial values of the neuroleptic group among the acutely ill schizophrenics (0.52). The difference is highly significant (df 70, t 3.27, $p<0.01$) (Guilford 1950).

In both forms of interpretations we find a pattern with overweight of wrong responses, dominantly concrete ones, relative to right responses in such a way that the chronic schizophrenic group can be located at one end as most metaphorically deviating and the normal group at the other end as most adequately functioning. Next to the group of chronics the acutely ill schizophrenics can be placed, then the brain damaged and depressive patients. Brain damaged and depressive

patients are in certain respects rather similar to each other but also to normals (quotients Cw/Cr and Aw/Ar), while in others the depressives are more similar to acute schizophrenics (quotient Cw/Ar).

Comparing subgroups of high verbal intelligence and low verbal intelligence we find that on the high verbal intelligence level especially

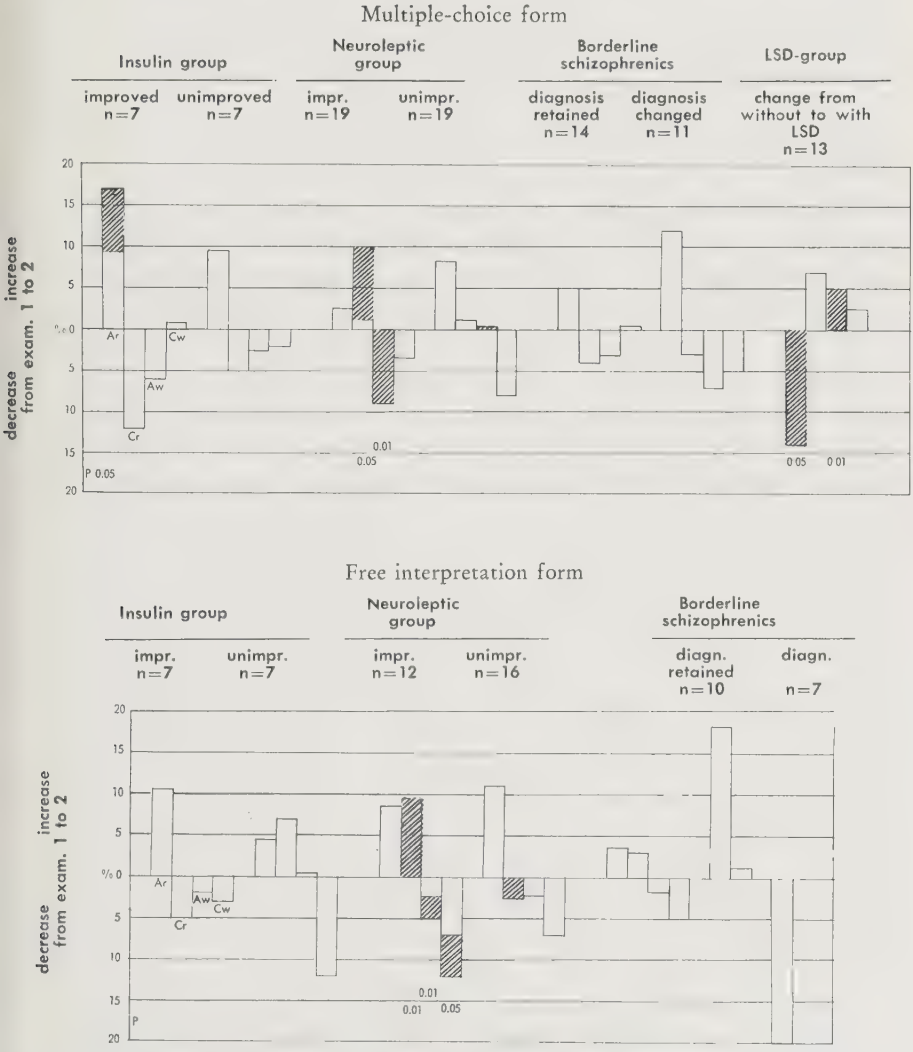

Figure 1. Diagram showing the per cent increase or decrease from examination 1 to 2 in various categories of interpretations on the multiple-choice and the free interpretation forms in different diagnostic groups. Sloped lines mark areas pertaining to statistically significant changes between subgroups.

the quotient Cw/Ar differentiates between the groups in a very pronounced way. To a less degree this is the case also for the quotient Cw/Cr. While the schizophrenic groups at the high verbal intelligence level tend to retain their relative proportion of inadequate choices, normals of corresponding verbal intelligence have much smaller proportions of such choices as compared to the total groups. The one exception to this is the proportion Aw/Ar-responses in which normals exceed even the chronic schizophrenics. Aw-responses thus seem not to be an exclusive pathognomonic deviating type of response.

(b) Differences of change in metaphoric behavior connected with treatment or with change in psychiatric status

Figure 1 is a summarizing diagram of per cent changes in metaphoric verbal behavior in acutely ill schizophrenics from before to after treatment in psychiatrically improved and impaired groups. The net differences of changes in these two groups are statistically significant only in few cases. It seems therefore most appropriate to talk about tendencies of changes for all groups and categories of interpretations.

When comparing the insulin and the neuroleptic groups the differential effects of treatment is evident. The increase of Cr- and decrease of Aw-responses differentiate metaphorically the improved neuroleptic group from the impaired one. This is in contrast to the insulin group in which the emphasis is on increase in Ar-responses. The changes after treatment are however contaminated with differences between the groups in verbal intelligence, probably also in psychiatric state before treatment.

In the group of borderline schizophrenics the changes are very unanimous and go in expected direction. Patients who change in diagnostic status are most metaphorically improved, patients who retain the diagnosis of borderline schizophrenia are least improved.

The LSD-group finally in which the change is measured from normality to a drug state we found to have a pattern of change which is more or less the inverted picture of the improved insulin group. Thus there is a dramatic decrease in Ar-responses with increase in all other types of responses.

So far the summary concerns the multiple-choice form of the interpretations. In the free interpretation form we obtain a good cross-validation for both the neuroleptic and the borderline groups. Besides we note that the changes are much less pronounced in the insulin group in this form than in the multiple-choice form. It should also be observed that

in the free interpretation form the borderline schizophrenics with a changed diagnosis comes out in a more pronounced way with increasing Ar- and decreasing Cw-responses.

(c) Prognostic implications of metaphoric verbal behavior

In the preceding paragraphs we have incidentally touched on prognostic implications of metaphoric verbal behavior. We have found, table 4, that the more the patients are similar psychiatrically to normal Ss the more stably they function metaphorically in having high frequencies of Ar-responses. They are thus the more able to understand the metaphoric statements representationally, to desymbolize, resymbolize and translate them into new adequate symbolic referents.

We have also found that the more stabilized the patients are psychiatrically, the better they function metaphorically. This is so irrespective of whether the improvement is due to treatment or to spontaneous change. We have found further, that the metaphorical change is differential to both type of treatment and initial psychiatric status.

Finally we will point to high verbal intelligence as an important prognostic indicator for stabilized metaphoric functioning. Groups of different verbal intelligence levels have different profiles of metaphoric change. This is seen in the insulin group compared for instance with the neuroleptic group but also in one of the depressive groups (Brattemo 1962c, 1967c). Most remarkable is the patterning of metaphoric behavior among brain damaged patients. In the low intelligence subgroup patients showed a metaphoric behavior rather similar to a chronic schizophrenic group of equivalent intelligence. Quite contrary to what would be expected, that patients of high verbal intelligence should be most vulnerable to brain damage, the opposite is the fact (Brattemo 1967a).

Chapter V

FIVE YEARS LATER

In preceding chapters we have reviewed studies of male schizophrenic patients examined before and after a period of intensive treatment with neuroleptics (Brattemo 1962c, 1965a, 1965b). In this chapter we are going to present the results of a follow-up study of that group made approximately five years later. The dependent variables were as usual the proverbs interpretations applied in both forms. The independent variables were verbal intelligence, ratings of symptoms and ward behavior, evalution of clinical status, differentiation according to work adjustment and nosological differentiation into paranoid *versus* not paranoid patients. The reason for this latter differentiation is presented in detail in the Introduction, section B:e (pp. 9, crf. pp. 18—19).

Elaborating somewhat further on the last mentioned differentiation, it is well known that paranoid patients generally are hypervigilant in a defensive way both inter- and intrapersonally. Having better ego-control or integration of personality than other types of schizophrenics, paranoid patients are prone to hide signs of pathology. The specific expectation as to their metaphoric behavior is therefore that their verbal generalizations are more precise and relevant than those of other schizophrenics. This should be evident above all in a lower frequency of nonsense responses, of refusals and, over time, in a pattern of slower cognitive impairment.

A. *Examining procedure, group, and ways of presenting results*

1. Procedure

The group, n=42, consisted of testable male schizophrenics who at the admission to the psychiatric clinics had been without active psychiatric treatment during a considerable time. The patients were selected consecutively from the beginning of November 1960 till the end of April 1961, i.e. during half a year.

Before any treatment was initiated the first examination with the various instruments was made (examination 1). During an average of 43 days the patients were treated intensively with chlorpromazine. The pharmacon was not given in any standard dosages but adapted to each

patient to give a maximum of clinical effect. [a] After this period of treatment and immediately before leaving the clinics on parole or as discharged patients, they were reexamined (examination 2).

The follow-up study started in the end of 1964 and lasted of various reasons till July 1966 (examination 3). The period between the lst and the 3rd examination thus varied between 4.5 and 5.5 years with an average of 5 years. At the time of this 3rd examination some patients, n=13, were hospitalized. They were examined when in best clinical condition, supposedly in habitual state. The other patients were either invited to the clinics or called on in their homes.

During the time between 2nd and 3rd examination all patients were medicated with neuroleptics though in much smaller dosages than in the clinics. According to the records the total length of medication was less than one year for 7 of the patients. The remaining patients were divided evenly on the periods one to three years, and more than three years. Because we cannot be sure that all patients complied with the prescriptions, all we can say is that the treatment was much less controlled during this period than when they were in the clinics.

Of the 42 patients undergoing the 1st examination we were able to make the 3rd examination on 38. The dropout of 4 patients equals to 9.5 per cent. One of them, hospitalized and diagnosed as hebephrenic, was impossible to examine because of a deep autism. One out-clinic patient was quite unwilling to comply with the instructions. Two other out-clinic patients refused to see us at all because of delusional ideas. These three patients were diagnosed as paranoid schizophrenics.

2. The group

Appendices 3 and 4 contain social-psychiatric data for each patient and a summary of them for the whole group and the subgroups of patients.

The group consisted of men aged from 16 to 58 years at admission. The average age is comparable with that of other groups used in this study.

The verbal intelligence level was slightly below normal level at the

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a) The average initial dosage was 300—350 mg/daily. After a few days the dosages were gradually increased to an optimal level with a maximum of 600—800 mg/daily.

1st examination. At the last examination the average level was sligthly improved and approached normality. a)

In 1960/1961 the majority of the patients, n=27, were classified psychiatrically as paranoid schizophrenics, the remaining patients were rather evenly distributed on the other nosological categories. A few patients, n=5, had had their first admission to a mental unit before 1950, most of the whole group, n=29, not earlier than 1955. For 14 patients the admission in 1960/1961 was the first one. Most of the patients, n=21, with previous hospitalizations, had been admitted to mental units during a total time of less than one year.

At the discharge in 1961 30 patients were evaluated as clinically improved. The symptom intensity had decreased markedly in the total group. Division into subgroups gave as result that clinically improved patients showed much less symptom intensity than impaired patients. The division into paranoid *versus* not paranoid patients did not differentiate them in this respect.

At the admission 34 patients were unmarried or divorced. Not less than 22 patients worked regularly or irregularly in unskilled industrial jobs, 17 patients had jobs of a more qualified type. It is worth noticing that only 3 patients were retired.

Focusing on the type of work at the 1st examination distributed on improved *versus* impaired patients we find the following trends. Of the patients evaluated as impaired at the 2nd examination, n=12, 8 had unqualified jobs before admission, worked irregularly or were retired. In the improved group, n=30, this was the case for slightly more than half of the patients, n=17. At the 3rd examination, i.e. after five years, the trend is about reversed for the patients then evaluated as improved *versus* impaired.

Turning to work adjustment during the five years period we find the similar trend among impaired as compared to improved patients both at the 2nd and 3rd examinations. The proportion of patients continuing in their old professions is smaller, likewise is the proportion higher of patients retired during this time.

While the type of work at the 1st examination has little or no relation to evaluation of clinical change over five years, work adjustment has. In

a) As to the relative stability of verbal intelligence irrespective of psychopathological variation it is of interest to note that the correlation coefficient between values of the synonymous test from 1st to 3rd examination is 0.93.

this respect the clinically impaired group is markedly changed in predicted direction.

From the onset the whole group was both socially and psychiatrically a marginal one. The development of the impaired group, specially the fact that two thirds of the patients, n=8, had been retired during the five years, together with the fact that these patients had retained a diagnosis of schizophrenia during at least or more than five years, and all this in spite of more or less intensive treatment, gives reason to consider this subgroup as more or less chronic schizophrenic. That also the improved subgroup had its considerable share of retirements (35%) is worth observation.

Not only the impaired group, therefore, but also the group as a whole seems to have a rather bad prognosis in spite of treatment and develops over time toward a chronic type of schizophrenia. This is evidenced specially in the high percentage of retirements (50%) for the whole group. In contrast to hospitalized chronic schizophrenics however, the personality organization of the patients in our group in interaction with social and other external circumstances was such that they could function acceptably during longer or shorter periods of time outside a mental unit.

Finally we will point to the observation that the neuroleptic treatment, especially if intensive, tends to heterogenize the proverbs interpretations in such a way that great numerical differences do not come out as statistically significant. This effect on the metaphoric activity has possibly to do with the sedative effects of the drugs affecting in a differential way the motivational and affective systems making some patients more apathetic and stimulus-bound.

3. Steps taken in elaborating and presenting the results

(a) Use and effectiveness of measures of independent variables

In published studies of metaphoric changes from before to after the intensive treatment period we have presented the results using ratings of ward behavior and symptoms as well as clinical evaluation as critical variables (Brattemo 1962c, 1965a). Both ratings and evalution differentiate the patients not only as to the critical variable in question but also as to interpretations. Rating of ward behavior is however less efficient. Rating of symptoms and clinical evaluation are about equivalent for the multiple-choice form of the proverbs series. For

the free interpretation form the rating of symptoms, especially regarding autism and thinking disorder, is superior to the global evaluation in predicting the results in the proverbs test (Brattemo 1962c, 1965a).

The symptom rating is however rather arbitrary for many patients. Among other thing the correlation between changes of symptoms and of interpretations is rather small. a) Therfore we have choosen to use the global clinical evaluation as the critical variable in the present chapten. b)

In addition to clinical evaluation and of reasons which have been stated in the introductory part of this chapter (pp. 60) we have also used the conventional psychiatric classification of paranoid *versus* not paranoid patients as a critical criterion.

The poor work adjustment of the whole group during the five years period, specially the fact that no less than 50% of the patients were retired at the end of that period, will be used as a third criterion. That is, we have divided the patients into those retired and those not retired and have calculated for each subgroup the change in relative frequencies of interpretations from admission to the end of the intensive treatment period and from the end of that period to the end of the five years period.

Tables and figures in appendix 5 give a detailed presentation of the results. The results refer to the complete proverbs series and the subscale consisting of the Ar-provocing items, both the multiple-choice and the free interpretation form. The first part of the appendix is focused on the differentiation of patients according to clinical evaluation with the addition of chronic schizophrenics for comparison, the second part on the division into paranoid and not paranoid patients.

The partitioning of patients in improved *versus* impaired groups is made in retrospect with reference to change during the period of intensive treatment. The figures for the first examination thus give the initial results for patients clinically evaluated at the second examination as improved *versus* impaired. The clinical evaluation in improved *versus* impaired groups and made at examination three refers to the psychiatric development of the patients during the five years. This means that some patients were evaluated in the opposite direction at the 3rd examination as compared with the one made at examination 2 and vice versa. Regarding the fact that the first evaluation covers

a) $r_s = 0.22$ between changes of symptoms and of Ar-responses.
b) For further discussion of this, see pp. 37.

only one and a half month while the second evaluation covers five years we consider the latter as the ultimate one.

What has been said in the last paragraph explains why there are more clinically impaired patients at examination three than at two, i.e. some of the finally impaired patients were evaluated as improved at the 2nd examination. That the sum of improved and impaired patients at examination three is less than that of the total group depends on the matching procedure for age and verbal intelligence. This last line of reasoning applies also to the differentiation into paranoid and not paranoid patients. In this differentiation, however, the groups examined before and after intensive treatment as well as after five years are made up of the same patients.

(b) The interpretations

The metaphoric behavior in terms of interpretations are presented according to the critical criteria: clinical evaluation in improved and impaired patients, division according to psychiatric classification in paranoid and not paranoid patients and work adjustment in terms retirement.

In presenting the results of clinical evaluation we give besides a survey of the detailed information of appendix 5 a presentation of the results along two lines. As in the summary of the preceding chapter we have summarized the results as quotients between relative frequencies of various categories of interpretations. This has been made not only for the results of clinical evaluation but also for the paranoid —not paranoid and retired—not retired dichotomy and is found in tables 6—8.

The other way of surveying the results is found in figures 2—5. In this presentation we have differentiated between two types of metaphoric behavior: "realistic thinking" and "unrealistic thinking". "Realistic thinking" we conceive of as the specific relevant responses characteristic for normal Ss, i.e. Ar-responses. "Unrealistic thinking" is conceived of as the specific irrelevant responses found to characterize chronic schizophrenics, viz. Cw-responses. In the free interpretation form we have added two other forms of irrelevant responses to the Cw-responses, namely nonsense responses and refusals, which also predominate in chronics. We have calculated the proportions of the two types of metaphoric behavior for each proverb and plotted these proportions along an x-axis with items arranged according to their pro--

portion of Ar-responses found in pooled normal and pathological groups, i.e. from "easy" to "difficult" items.

The division into paranoid — not paranoid patients will be presented as a survey of the relative response frequencies in the various categories of interpretations (last part of appendix 5) over the five year period. It will also be presented in terms of the response preferences calculated as quotients previously described.

The division according to retirement will be visualized in the diagram already described showing changes in per cent of interpretations between specified examination (pp. 64—65). It vill also be presented in terms of the quotients applied in the two other divisions of patients.

Examination		Degree of similarity		
		1	2	3
1 vs. 2	M	81.8	10.6	7.6
	Range	50.0—100	0.0—28.6	0.0—31.8
1 vs. 3	M	91.8	4.3	3.9
	Range	73.7—100	0.0—13.6	0.0—21.1
2 vs. 3	M	88.1	5.7	6.2
	Range	57.9—100	0.0—18.2	0.0—26.3

Degree of similarity:
1=None or slight phraseological similarity between responses on the same proverb
2=Moderate phraseological similarity
3=Great or total phraseological similarity

Table 5. Degrees of phraseological similarities expressed in per centages for proverbs responses compaired pairwise over possible arrangements of examinations.

Repeated proverbs examinations might influence the results through various "training effects", for instance being used to the examination procedure, actively remembering the responses of previous examinations and so on. To check this type of training effect we have examined the free interpretations given by 22 patients who responded to most items at the three examinations. The comparison refers to the phraseological similarity and has been made by one judge (school psychologist). The result, found in table 5, shows that between 80 to 95 per cent of the item comparisons have none to moderate similarity over various

examinations. This training effect cannot therefore be said to invalidate the results of the free interpretations.

B. *Results*

In analyzing the results of the proverbs interpretations distributed on various response categories we have found only a small proportion of possible differences to be statistically significant (tables 5—6 and 11—12 in appendix 5). In the presentation of the results we will therefore also comment upon various numerically large tendencies in various directions.

1. Clinical evaluation

(a) Comparison of relative response frequencies in various categories of interpretations

In previously published studies we have noted a tendency toward metaphoric "normalization" in the clinically improved group in terms of increased frequency of Cr-responses and decreased frequency of Aw-responses after the period of intensive treatment. This normalization was most noticeable in patients of low verbal intelligence. We noted however also, that in terms of both Ar- and Cw-responses the impaired group functioned somewhat better metaphorically than the improved group. We noted further that the group of impaired patients was initially less adequate in metaphoric behavior than the group of improved patients (Brattemo 1965a, 1965b).

These previously published results are reproduced in tables and figures in appendix 5 and referred to as examinations 1 and 2. The presentation of the free interpretations are however different from previous presentations in so far that the evaluations contain intermediary categories of abstract-concrete responses with the addition of nonsense responses and refusals. In order to obtain additional information we have also used the subscale consisting of Ar-provocing items.

Surveying that part of appendix 5 which pertains to clinical evaluation and which gives a total view of the distribution of responses on the various categories of interpretations we observe the following essential features. First, the impaired group functions initially somewhat more inadequately than the improved group. This is especially obvious in a higher frequency of Cw-responses in the multiple-choice form but also in a higher frequency of refusals in the free interpretation

form. Secondly, as has been pointed out previously in this study, both the clinically improved and impaired subgroups show a tendency to be rather dramatically improved in their interpretations in terms of increased frequency of Ar-responses after the intensive treatment period. This is most evident in the free interpretation form. It might even be that the clinically impaired group shows a tendency to function better in this respect than the other group.

The metaphoric functioning of the clinically improved group is however more adequate in terms of the average value of the total number of relevant response categories. This is seen especially in the high frequency of Cr-responses in both forms of interpretations. The improved group shows also a radical decrease of both nonsense responses and refusals as compared with the impaired group.

Over a five year period with less intensive treatment and living outside the clinics both the clinically improved and impaired groups tend to deteriorate in metaphoric behavior and become the more similar to a hospitalized chronic schizophrenic group. This metaphoric impairment comes out in both groups as decrease in frequency of Ar-responses, increase in frequencies of nonsense responses and refusals. It is though worth noticing that the clinically improved group tends to retain its higher frequency of Cr-responses compared with the impaired group.

(b) Response preferences in terms of quotients between relative frequencies of categories of interpretations

The results which are to be summarized are found in table 6. They refer to the relative frequencies of the categories Cw, Ar, Cw/Cr in the multiple-choice form. In the free interpretation form we have added nonsense responses/Ar and the sum of nonsense responses and refusals/Ar.

Comparing the clinically improved and impaired groups it is obvious that in the multiple-choice form the metaphoric behavior of the impaired group is initially more irrelevant than that of the improved group in terms of dominance of Cw-responses relative to both Ar- and Cr-responses. In the free interpretation form this comes out only for the nonsense responses and the refusals relative to Ar-responses.

The fact that the initial results of groups judged as improved *versus* impaired after six weeks of treatment differ considerably might suggest that a good initial metaphoric performance in terms of the quotients

		Group improved after intensivve treatment		Group unimproved and/or impaired after intensive treatment		Group improved after five years	Group unimproved and/or impaired after five years	Sch_{chr}	
		n=30		n=12		n=17	n=14	n=30	
Quotients	Exam.	1	2	1	2	3	3		
Cw/Ar	Total scale	0.44	0.36	0.72	0.30	0.58	0.50	0.88[3]	Multiple-choice form
	Ar-prov. scale	0.30	0.23	0.53	0.18	0.42	0.35	0.69[1]	
Cw/Cr	Total scale	0.45	0.32	0.72	0.36	0.40	0.38	0.58	
	Ar-prov. scale	0.40	0.35	0.57	0.42	0.49	0.47	0.67	
Cw/Ar	Total scale	0.31	0.14	0.22	0.02	0.30	0.19	0.65[3]	Free interpretation form
	Ar-prov. scale	0.18	0.09	0.14	0.00	0.24	0.05	0.31[1]	
Cw/Cr	Total scale	1.07	0.39	1.00	0.10	0.45	0.55	0.93[3]	
	Ar-prov. scale	0.85[3]	0.32[1]	1.33	0.00	0.59[1]	0.21	0.84[3]	
N+0/Ar	Total scale	0.48[2]	0.09[2]	0.95	0.45	1.02	1.03	1.32	
	Ar-prov. scale	0.32[1]	0.08[1]	0.69	0.39	0.69	0.76	0.79	
N/Ar	Total scale	0.16	0 03	0.30	0.15	0.22	0.10	0.41[1]	
	Ar-prov. scale	0.15	0.02	0.24	0.14	0.18	0.08	0.29	

Testing of significances of differences are made between quotients for improved and impaired groups at each examination. We have further tested the differences between quotients for impaired group, third examination, and Sch_{chr}

[1] $p \leq 0.05$, [2] $p = 0.01$, [3] $p < 0.01$

Table 6. Quotients between relative frequencies of the categories Cw/Ar, Cw/Cr, N+0/Ar and N/Ar in the multiple-choice and free interpretation forms distributed on the total scale and the Ar-provocing subscale over three examinations on clinically improved and impaired subgroups.

listed has a prognostic value for predicting the clinical outcome of intensive treatment during at least this length of time.

After the intensive treatment period both groups are markedly similar to each other in both proverbs forms with the exception of nonsense responses and refusals. In these categories relative to Ar-responses the metaphoric improvement in the clinically improved group is more marked than in the clinically impaired group.

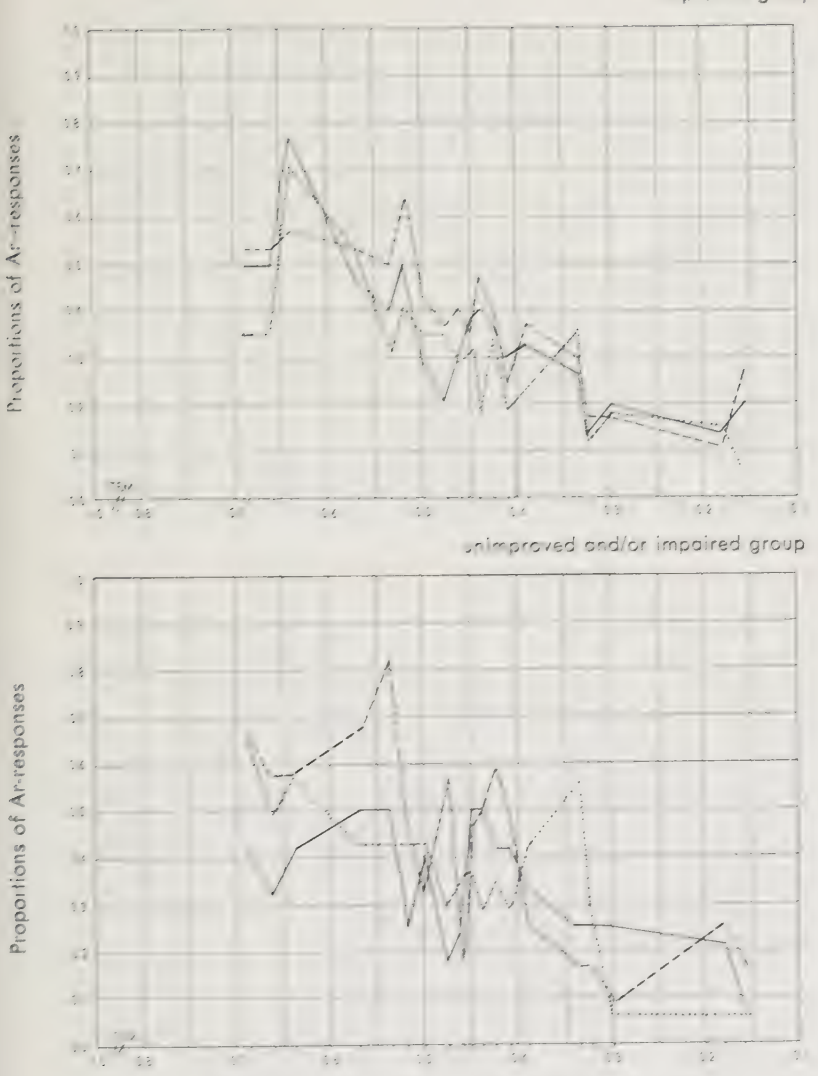
After the five years period both groups are still rather similar to each other in the quotients Cw/Ar and Cw/Cr of the multiple-choice form, in the last quotient also in the free interpretation form. The differences between the groups which however exist are such that the clinically improved group on the whole functions worse than the impaired group: in almost all aspects worse than after the intensive treatment period, in some aspects even worse than at admission.

The general trend in the metaphoric activity of both groups is toward that of a hospitalized chronic schizophrenic group, most pronounced in the clinically improved group. This is specially marked in the multiple-choice form but can also be seen in the free interpretation form, the quotients N+0/Ar and N/Ar. On the other hand it should be observed, as has been noted above, that improvement in metaphoric behavior in the two groups is about equal judging of the results obtained after six weeks of treatment and has no clearcut relation to clinical evaluation.

In passing it should be mentioned that the Ar-provocing items subscale for quotient computation does not seem to sharpen the differences obtained with the total scale.

(c) Differences between and within groups in relevant (Ar) and irrelevant responses (Cw and Cw+N+0) as a function of difficulty of items

The problem which this type of presentation attempts to answer is whether proverbs of different Ar-provocation differentiate between clinically improved and impaired groups when examined after intensive treatment and after five years. The results are found in figures 2—5. These figures can be compared with the quotients listed for the Ar-provocing scale in table 6.



The proverb items in the multiple-choice form arranged on the x-axis are from left to right: No. 12, 18, 22, 8, 6, 13, 20, 16, (9, 17), (7, 21), 10, 14, 5, 11, 3, 4, 15, (1, 19), 2.

Figure 2. "Realistic thinking" in terms of Ar-responses over different proverbs of the multiple-choice form arranged from high to low prevalence of Ar-responses along the x-axis.

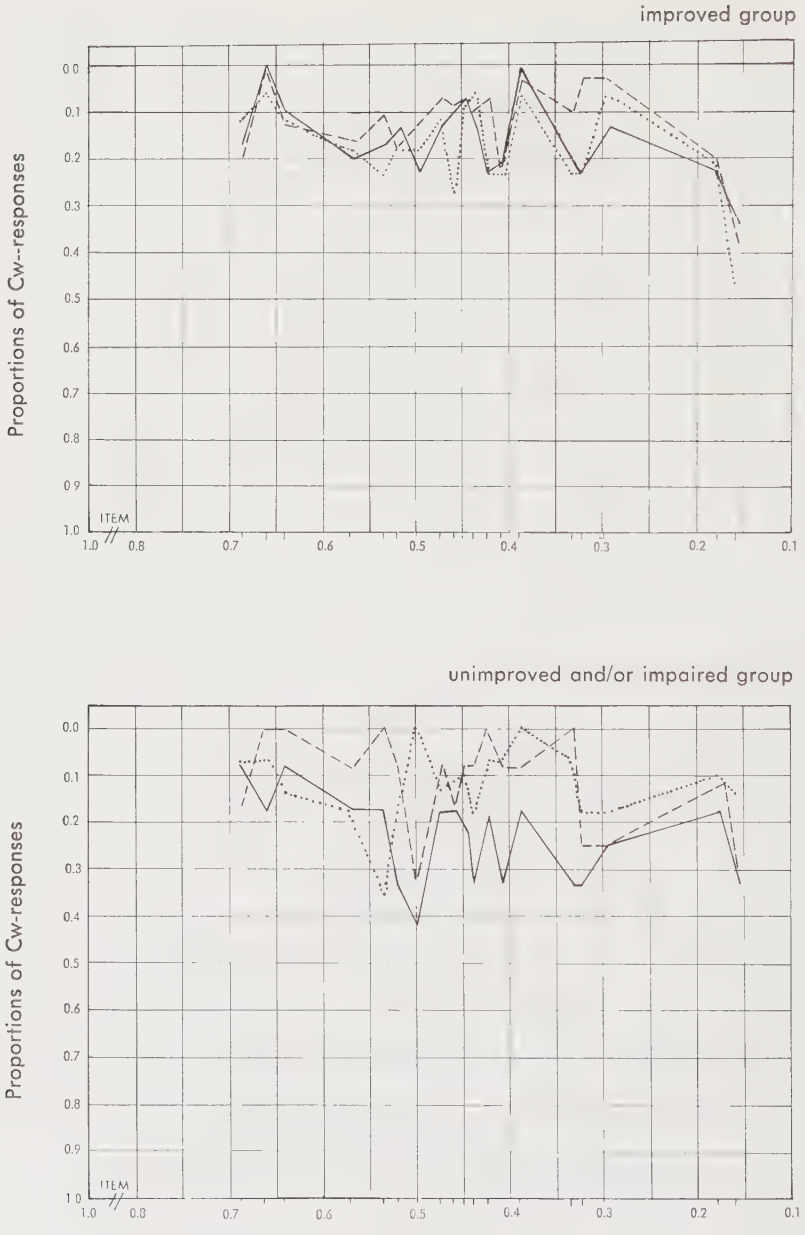
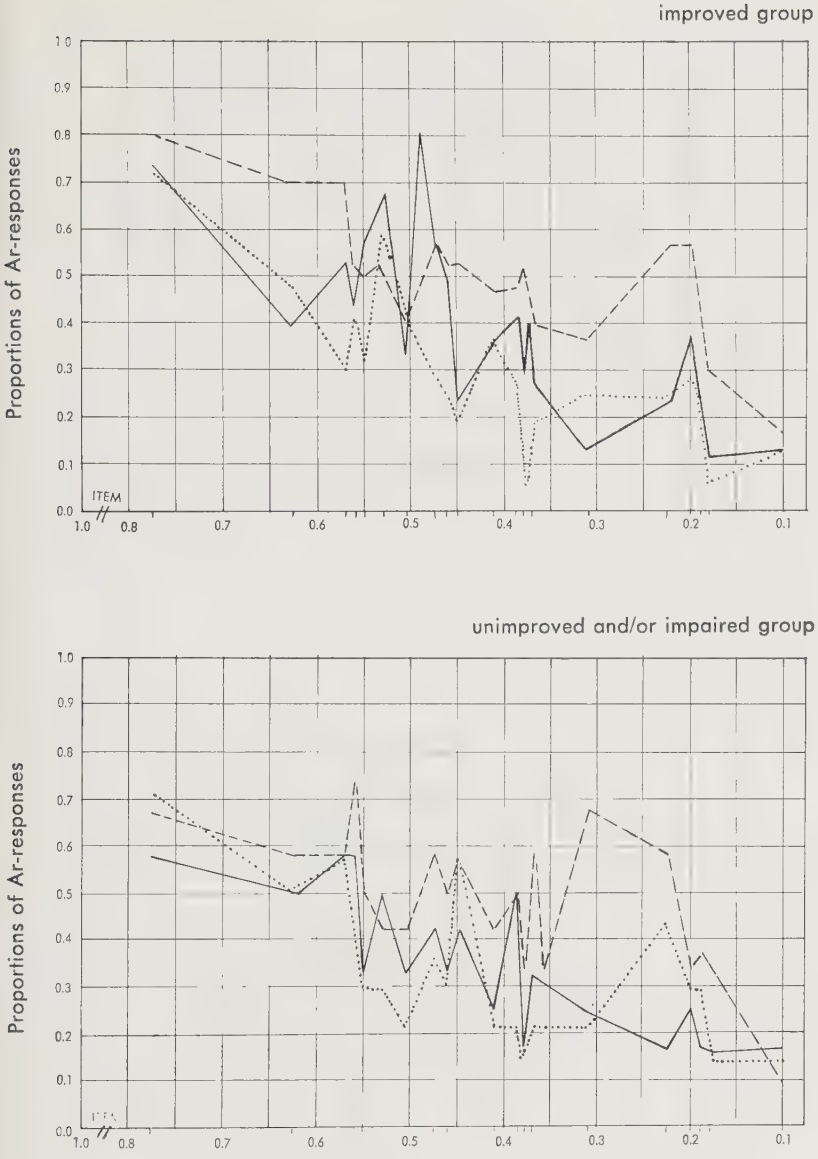


Figure 3. "Unrealistic thinking" in terms of Cw-responses over different proverbs of the multiple-choice form arranged from high to low prevalence of Ar-responses along the x-axis.



The proverb items in the free interpretation form marked on the x-axis are from left to right No. 13, 5, 10, 7, 21, 22, 15, 20, 17, 14, 8, (6, 18), 9, 12, 11, 1, 3, 19, (2, 16), 4.

Figure 4. "Realistic thinking" in terms of Ar-responses over different proverbs of the free interpretation form arranged from high to low prevalence of Ar-responses along the x-axis.

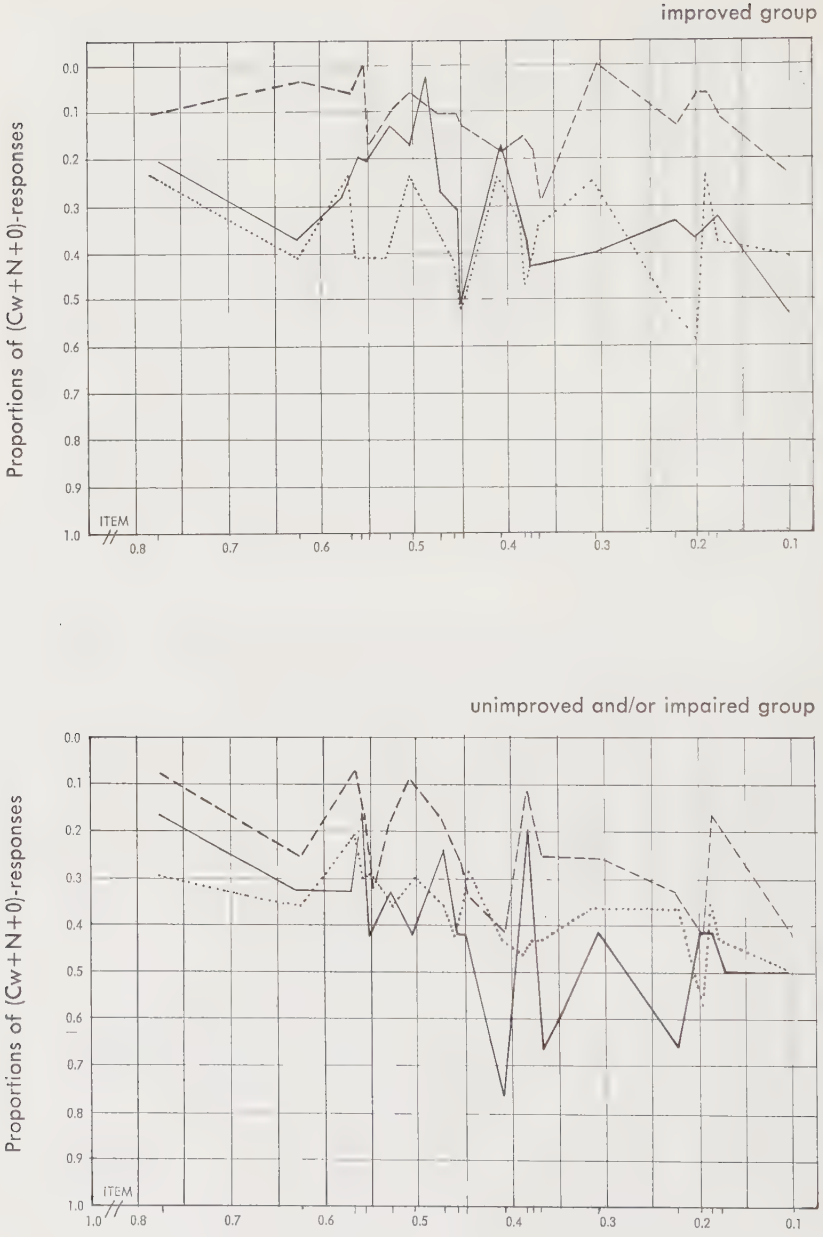


Figure 5. "Unrealistic thinking" in terms of (Cw+N+0)-responses over different proverbs of the free interpretation form arranged from high to low prevalence of Ar-responses along the x-axis.

In the figures which depict relevant responses or "realistic thinking", (figures 2 and 4), metaphoric improvement means that the lines connecting the plotted proverbs items should represent higher proportions of Ar-responses according to the degree of improvement. In a similar way metaphoric improvement in terms of irrelevant responses or "unrealistic thinking", (figures 3 and 5), should mean a lower proportion of Cw-responses, in the free interpretation form with the addition of nonsense responses and refusals.

In the multiple-choice form, (figures 2 and 3), we cannot see any interaction between differences obtained between examinations and difficulty of items. The lines follow each other quite closely and show a tendency toward decrease of relevant responses the more Ar-resistent or "difficult" the items are. As to irrelevant responses there is no marked tendency of this type. After the intensive treatment period both groups are on the whole improved in both types of responses. At the examination after five years the metaphoric functioning has deteriorated though generally not to the initial level. As a notable exception we find that in the clinically impaired group the relative frequency of irrelevant responses on Ar-resistent items is equal to or less than after intensive treatment (figure 3).

In the free interpretation form compared with the multiple-choice form we find first a greater dispersion between results obtained at different examinations. We also find that the arrangement of items according to various degrees of Ar-provocation differentiates the results from before and after intensive treatment most noticeably in the relevant responses. After the five years period the metaphoric activity deteriorates and becomes similar to that of the initial examination, even to the point of functioning in a more impaired way on some items, most pronounced in the irrelevant responses of the improved group (figure 5).

The main point, which applies to both the multiple-choice and the free interpretation form, is that the differences between groups as well as within groups show no tendencies to be correlated with degree of difficulty of items. There is thus no special part of the proverbs series which has more differentiating power than other parts. One exception seems however to stand out and this pertains to frequency of Ar-responses, the free interpretation form, in the impaired group at high levels of difficulty. The tendency, seen to the right in figure 4, indicates that the marked improvement at the second examination in this group comes out in better handling of the difficult items. The same tendency is seen also in the irrelevant responses depicted in figure 5.

As conclusion it can therefore be said firstly that after intensive treatment the groups tend to improve also metaphorically. Secondly, as in other types of presented results of clinical evaluation we have also in this one found no correlation between such evaluation and development of metaphoric activity. Thirdly, over a period of several years, even if treated psychiatrically, the patients tend to return to their initial level of metaphoric functioning.

2. Paranoid *versus* not paranoid patients

Surveying the second part of appendix 5 which pertains to the paranoid—not paranoid dichotomy it is seen that only the Ar-provocing subscale of the multiple-choice form indicates methaphoric improvement after the intensive treatment period among both categories of patients. This subscale indicates likewise more relevant metaphoric functioning over the five year period among the paranoid patients. This comes out mainly as a steady increase of the relative frequency of the Ar-responses. In the other categories of interpretations the patients tend to remain on the same level after five years as after six weeks of intensive treatment.

Turning to the free interpretation form we note first that the paranoid subgroup initially has significantly fewer refusals than the not paranoid subgroup but also that it tends to function somewhat more irrelevant in all other respects. At the end of the five year period the two groups are essentially alike with one important exception. The paranoid patients have very few nonsense responses in contrast to the not paranoid patients who have even a higher frequency of them than at the admission. Comparing the results of interpretations after five years with those after intensive treatment it is seen that the not paranoid patients have declined more in their metaphoric behavior than the paranoid patients.

Summarizing the quotients of the relative frequencies of various categories (table 7), we note the relative dominance of Cw- and nonsense responses relative to Ar- and Cr-responses at the initial examination in the paranoid as compared to the not paranoid patients, the only exception being the quotient N+0/Ar. After the intensive treatment period this dominance is less in each group than at admission. The differences between the groups are however in favor of the not paranoid patients. After the five year period the patients in both groups tend to return to the initial levels but this tendency toward impairment

a less marked in the paranoid group. The relative frequency of the sum of aggressive responses and refusals relative to Ar-responses is however one exception to this. Another exception, and the main one, is the differential preference of aggressive to Ar-responses in the two groups.

Quotients	Exam.	Not paranoid patients n=14			Paranoid patients n=17		
		1	2	3	1	2	3
Cw/Ar	Total scale	0.49	0.25	0.34	0.52	0.37	0.45
	Ar-prov. scale	0.34	0.14	0.40	0.44	0.28	0.25
Cw/Cr	Total scale	0.40	0.23	0.32	0.59	0.36	0.42
	Ar-prov. scale	0.35	0.24	0.44	0.50	0.44	0.44
Cw/Ar	Total scale	0.17	0.06	0.15	0.43	0.13	0.15
	Ar-prov. scale	0.09	0.04	0.08	0.24	0.06	0.09
Cw/Cr	Total scale	0.88[3)]	0.25	0.42	1.25	0.44	0.57
	Ar-prov. scale	0.79[1)]	0.27	0.43	1.00	0.26	0.45
N–0/Ar	Total scale	0.63	0.12	1.07[3)]	0.50	0.15	0.75
	Ar-prov. scale	0.44	0.12	0.63	0.30	0.09	0.63
N/Ar	Total scale	0.12	0.05	0.25[1)]	0.34	0.09	0.01
	Ar-prov. scale	0.14	0.01	0.19[1)]	0.25	0.04	0.00

Multiple-choice form

Free interpretation form

Testing of significance of differences are made between quotients for groups of not paranoid and paranoid patients at each examination.

[1)] $p<0.05$; [2)] $p<0.01$; [3)] $p<0.01$

Table 7. Quotients between relative frequencies of the categories Cw/Ar, Cw/Cr, N–0/Ar and N/Ar in the multiple-choice and free interpretation forms distributed on the total scale and the Ar-provoking subscale over three examinations in groups of not paranoid and paranoid patients.

While those responses are almost absent among the paranoid patients they have even increased among the not paranoid patients after five years as compared with the initial level.

We have thus found, first, that paranoid patients are more resistent to change than not paranoid patients with reference to concrete irrelevant responses relative to other types of responses. Secondly, over time they tend however to retain their relative metaphoric improvement obtained after intensive treatment or at least to deteriorate slower than not paranoid patients. Thirdly, still over time, paranoid patients like not paranoid tend to be less apt to respond at all. But in contrast to not paranoid patients the responses of the paranoid ones lose their character of "overinclusiveness" as judged from the absence of nonsense responses.

This more relevant metaphoric functioning of paranoid as compared to not paranoid patients is also reflected in some of the social-psychiatric data which we have collected (appendix 4). It has been mentioned above that the two groups are similar as to symptom intensity (pp. 62). Neither do they differ as to ward behavior. But the paranoid patients tend to have a shorter total time of illness than the other patients. Their average time of rehospitalization during the five years period is also shorter. Lastly their work adjustment during that period is considerably better than that of the not paranoid patients.

3. Patients retired *versus* not retired during a five years period

As noted above (pp. 62) we have found among the social data for the total group that the work adjustment of the patients develops in negative direction during the five year period. This is closely related in a predictable way to the clinical evaluation, most evident in the higher frequency of retirements among clinically impaired patients during the period.

We have therefore divided the whole group into patients retired after five years *versus* not retired. In other social-psychiatric aspects the two groups are sufficiently similar to each other to be comparable with the exception of average length of time of rehospitalization during the five years in favor of the not retired patients.

The problem is whether or not retired in contrast to not retired patients function more irrelevantly in verbal metaphoric tasks at various times during the period.

Reviewing the quotients between relative frequencies of various response categories, (table 8), we find first, that the interpretations of the group of retired patients at admission indicate more metaphoric impairment than in the other group. This trend can be noticed in both forms of interpretations but is most marked in the quotient Cw/Cr of the free interpretation form. Secondly, after six weeks of intensive treatment the retired group is constantly less improved in metaphoric functioning than the other group. Thirdly, after five years both groups are much similar to each other. This means that the retired patients function better after five years than they did initially. It also means that the retired patients on the whole function on the same metaphoric levels as after the intensive treatment period.

After five years the not retired patients have been impaired even to the point of their initial level. The proportion of N+0-responses

		Retired patients n=21			Not retired patients n=21			
Quotients	Exam.	1	2	3	1	2	3	
Cw/Ar	Total scale	0.60	0.41	0.44	0.44	0.28	0.43	Multiple-choice form
Cw/Cr	Total scale	0.53	0.36	0.36	0.48	0.28	0.40	
Cw/Ar	Total scale	0.41	0.13	0.20	0.19	0.09	0.15	Free interpretation form
Cw/Cr	Total scale	1.25[3]	0.41	0.45	0.84	0.30	0.44	
N+0/Ar	Total scale	0.75	0.27	0.65	0.51	0.11	0.91	
N/Ar	Total scale	0.26	0.07	0.10	0.16	0.06	0.13	

Testing of significances of differences are made between quotients for groups of retired and not retired patients at each examination.

[1] $p \leq 0.05$, [2] $p = 0{,}01$, [3] $p < 0.01$

Table 8. Quotients between relative frequencies of the categories Cw/Ar, Cw/Cr, N+O/Ar and N/Ar in the multiple-choice and free interpretation forms distributed on the total scale over three examinations on groups of retired and not retired patients.

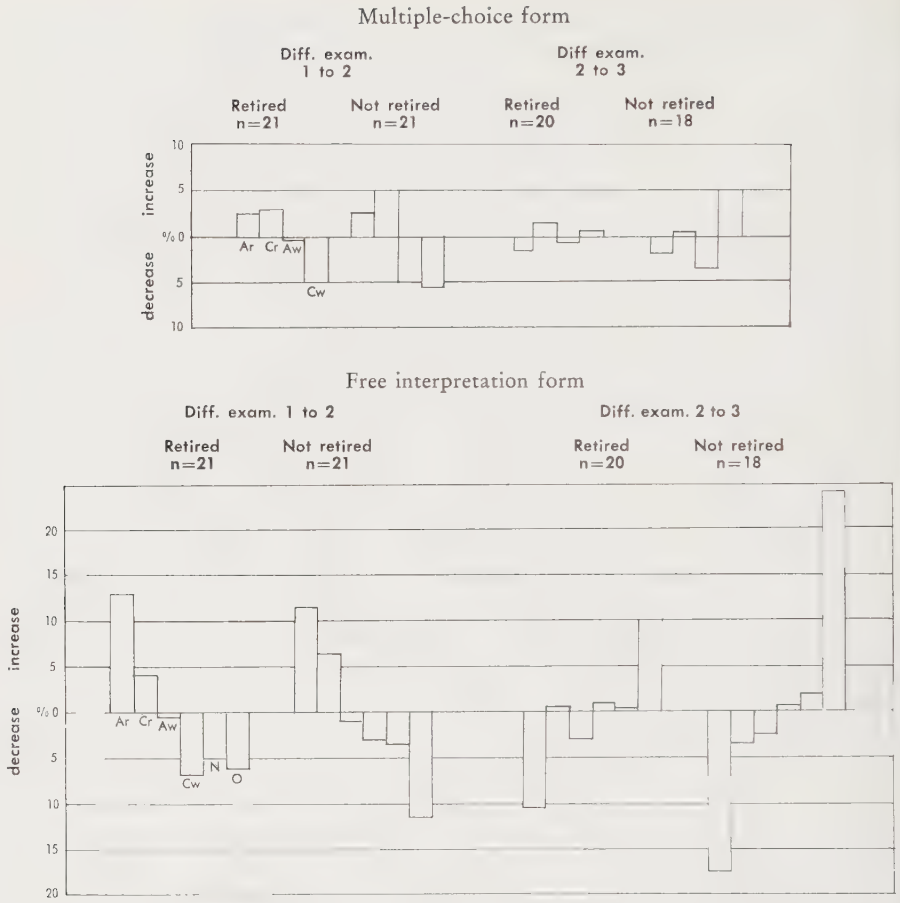


Figure 6. Diagram showing the per cent increase or decrease from examinations 1 to 2 and 2 to 3 in various categories of interpretations in the multiple-choice and the free interpretation forms in groups of retired and not retired patients.

relative to Ar-responses is even greater among these patients than it was initially, a tendency however found also among retired patients. One exception is the quotient Cw/Cr of the free interpretation form which indicates that not retired patients have improved during the five years although they are somewhat impaired when compared with the results after the intensive treatment period.

The results in terms of per cent changes in verbal metaphoric behavior from admission to the end of the intensive treatment period, and from the end of that period to the end of the five years period are illustrated in figure 6. As can be seen the changes in the multiple-

choice form are constantly smaller than those of the free interpretation form. None of the net differences of changes in any of the forms are statistically significant.

What can be found more specifically as differentiating tendencies between retired and not retired are a) a pronounced tendency toward decrease of Aw-responses in the multiple-choice form, and b) of refusals in the free interpretation form among not retired patients from admission to the end of the intensive treatment period. After the five years period the not retired patients have changed more in direction of impairment than the retired patients. This is most evident in the differential decrease of Ar-responses and increase of refusals seen in the free interpretation form.

Using work adjustment in therms of retirement—not retirement as a critical variable we have thus found that the two groups are similar to each other in social-psychiatric aspects. The retired group is more impaired metaphorically at admission than the other group, and less improved after intensive treatment. After five years both groups are metaphorically similar to each other, but with a tendency of the not retired group to be more impaired, as deduced from the relatively larger decrease in Ar-responses combined with larger per cent increase in refusals.

Summary

(a) The group

At admission the patients were evenly divided in three groups: a) never admitted to the clinics before, b) diagnosed as schizophrenics between one to five years ago, (c) diagnosed more than five years ago. The social and psychiatric development of the patients over a five years period was such that especially those evaluated as clinically impaired but also the group as a whole took on the characteristics of the chronic schizophrenia type.

(b) Clinical evaluation

The initial metaphoric behavior of patients evaluated as clinically improved compared to those evaluted as impaired after intensive treatment is more relevant in most categories of both interpretation forms. After the intensive treatment period a more relevant metaphoric functioning among clinically improved patients is evidenced in

terms of higher frequency of Cr-responses and lower frequencies of refusals and nonsense responses. On the other hand clinically impaired patients are improved metaphorically in terms of higher frequency of Ar-responses and lower frequency of Cw-responses as compared with the results obtained at admission. These results are obtained both in terms of relative frequencies of responses in various categories and quotients between relative frequencies of categories. A good initial metaphoric performance in these terms seems to be a fair prognostic sign for the positive outcome of intensive treatment. With regard to changes, however, clinical evaluation and alterations in metaphoric behavior do not seem to go together in most cases.

Over a five years period, however, with less controlled and intensive treatment both groups deteriorate metaphorically and tend to become similar to a hospitalized chronic schizophrenic group. The difference is found mainly in the higher frequency of Cr-responses in the improved as compared to the impaired group. The lack of correlation between clinical evaluation and metaphoric behavior is still more marked than after intensive treatment.

Neither do we find any correlation between clinical evaluation and metaphoric functioning when plotting proportions of relevant and irrelevant responses over items arranged according to degree of "difficulty". Both groups tend, irrespective of degree of "difficulty" of items, to be improved after intensive treatment and impaired after five years of less controlled treatment. Quite contrary to what could be expected the impaired group functions better in handling "difficult" items" in both interpretation forms. This pertains to irrelevant responses, in the free interpretation form also to relevant responses.

(c) Paranoid *versus* not paranoid patients

Partitioning the patients into paranoid and not paranoid groups we find a pattern and development of metaphoric behavior which on the whole is in accord with what we have expected (pp. 9, 60). The metaphoric behavior at admission is more irrelevant in the paranoid than in the not paranoid group. The effect of intensive treatment is less marked in the paranoid group but the metaphoric deterioration is slower over the entire five years period. The better functioning in the paranoid group is most evident in the absence of nonsense responses after five years which is to be contrasted with the increase of these possibly "overinclusive"-indicating responses in the other group. Metaphoric functioning is therefore correlated in a predicted way with this division

of the patients. It is also correlated with a better social-psychiatric adjustment.

(d) Work adjustment in terms of retirement *versus* not retirement

Using a social criterion which however is correlated with clinical evaluation, retirement *versus* not retirement, we have found that a poor metaphoric performance at admission in conjunction with moderate improvement after intensive treatment seems to be prognostic for the probability of poor work adjustment in the future, possibly being retired. Over time both groups tend to deteriorate to the same metaphoric level but with a tendency, contrary to expectation for not retired patients, to decrease in relative frequency of Ar-responses and increase in relative frequency of refusals more than retired patients do.

Chapter VI

GENERAL DISCUSSION OF RESULTS OBTAINED

The results of our studies will now be discussed in immediate connection with the general and specific problems specified in the introduction (pp. 8—9).

1) The characteristics of metaphoric verbal behavior in schizophrenics can be spelled out in the following points. Compared with various other groups the metaphoric behavior of schizophrenics in both forms of interpretations is characterized by the low relative frequency of Ar-, and dominance of mainly Cw-, to a certain degree also of Aw-responses. The inadequacy of the schizophrenic metaphoric behavior can thus be expressed in terms of impaired logicality and of concreteness. The relative frequency of these pathognomonic signs relate to the degree and intensity of psychopathology, thus being most accentuated in chronic schizophrenics. Though differences in verbal intelligence has some influence on the results in schizophrenics it is important to stress the point that correlation between verbal intelligence and metaphoric behavior is much less in chronic schizophrenics than in normals. In the free interpretation form we have furthermore found a predominance of nonsense responses and refusals in the schizophrenic records.

It is also worth noting that some of the characteristics found to a less degree in acutely ill schizophrenics also can be found in other groups, viz. brain damaged and depressive patients.

2) The second general problem concerns the relations between metaphoric changes and changes in clinical state over a short period of intensive treatment and over a five years period with less controlled treatment.

Preliminarly it can be said that change in clinical state, spontaneous or due to intensive treatment, always is reflected in metaphoric improvement. Type and degree of metaphoric improvement seems to be dependent on social-psychiatric status at admission and type of treatment used. Of importance is also to notice the differential metaphoric improvement due to variations in verbal intelligence level, and to some extent also to variations in age.

There is little or no relation between clinical evaluation of improvement and changes in metaphoric behavior. This lack of correlation is still more evident when the patients are reevaluated after a five years period. In some aspects of metaphoric behavior clinically im-

paired patients function even better than improved patients. On the whole both types of patients improve metaphorically after intensive treatment and deteriorate after a period of less controlled treatment.

On the specific questions the following comments can be made:

a) We have stated a hypothesis that schizophrenics with a development over time in direction of poor clinical outcome in spite of treatment are more genuine schizophrenics than other patients. One assumption behind this hypothesis is that chronic patients suffer from the most genuine schizophrenia. The question whether such patients over time show more metaphoric disturbances than other patients must be answered in the negative. The subgroup to which this hypothesis applies, the clinically unimproved and/or impaired patients, does not function worse than the improved group. All patients followed during the five year period tend to develop metaphorically toward greater similarity with chronic continuously hospitalized schizophrenics.

b) Despite this tendency of development toward similarity with the chronic hospitalized schizophrenics we still find substantial differences in all categories of metaphoric behavior. This might be due to the fact that the chronics had been hospitalized during a considerable time, thus living in a socially and verbally unstimulating environment, while our follow-up-group has been living in a quite normal milieu. This is however contaminated with another fact, that the schizophrenia of the hospitalized chronics had had longer duration than the illness of the follow-up-group.

c) Assuming that nonsense responses are indicative of "overinclusiveness" we have found as expected that the patients give more of these responses the more servere their illness is, actely ill patients giving less of these responses than chronic schizophrenics (Brattemo 1967d). One exception however, is the relative frequency of nonsense responses at admission in the clinically impaired group which is about equal to that of the hospitalized chronics.

d) Our results support the hypothesis, that both brain damaged patients and schizophrenics are characterized by concrete responses as compared with normals. The difference found between brain damaged patients and schizophrenics on the other hand is in the direction of more Cr-responses among brain damaged patients and more Cw-responses among schizophrenics (table 4 pp. 56, Brattemo 1967a).

e) The assumption that paranoid patients could be expected to perform better in being more selectively attentive than not paranoid patients is not supported if we compare data from the initial examination in acute state. On the other hand paranoid patients tend to retain the methaporic level after the period of intensive treatment better than the not paranoid patients over the five years follow-up period. Furthermore, the relative frequency of nonsense responses decreases more over time among the paranoid than among the not paranoid patients.

f) Regarding the comparison between effect of treatment with neuroleptics and changes in metaphoric behavior seen in brain damaged patients it can be seen that an increase in Cr-responses seems to be the consequence of both conditions. Assuming the possibility that the mesodiencephalic reticular system might be one of the possibly important sites of action in both cases the dominance of Cr-responses might be indicative of lowered attentiveness.

g) The assumption that LSD-25 might interfere with the processes of logic and abstraction underlying metaphoric verbal behavior in a way similar to that seen in schizophrenia is on the whole verified in our studies. Both in the patterning of relative frequencies of responses in various categories in the drug state and in the patterning of changes from normal state to drug state the results are similar to those obtained from a verbally highly intelligent group of acute schizophrenics (Brattemo and Lassenius 1963, figure 1, pp. 57).

Beside these general and specific points we have obtained results indicating that periods of intensive treatment change metaphoric behavior in schizophrenics toward similarity with that of normal Ss. Further, a good initial metaphoric behavior is prognostic for the outcome of intensive treatment as well as for future work adjustment. Changes seen in metaphoric verbal behavior in schizophrenics as compared to normal groups cannot be characterized by any single sign such as concreteness (Gorham 1956a, Elmore and Gorham 1957) or "overinclusiveness" (Payne and Hewlett 1960, Inglis 1966) but rather in the patterning of several signs relative to each other.

Chapter VII

GENERAL SUMMARY OF THE DIFFERENT CHAPTERS

In chapter I we have outlined the problem area for our studies: we have specified the problems in general and specific questions, we have previewed studies already undertaken and stated the main object of a follow-up study which partly contains new material not published earlier. The chapter also contains a discussion of the problems inherent in diagnosing a patient as schizophrenic.

Chapter II is a review of pertinent literature starting with various concepts of schizophrenia and particularly of "thought disturbances" found in this disease. Having reviewed various interpretative constructs we focus on different meanings of "abstracting impairment" in schizophrenics, emphasizing especially metaphoric verbal behavior as revealing a series of interesting aspect of this impairment.

Chapter III gives a description of instruments used for measuring dependent and independent variables as well as of groups and methods of statistical treatments.

Chapter IV, containing a detailed review of already published studies, starts with the influence of certain general factors: intelligence, age, sex, anxiety and administrative forms of the task used. We then review the results obtained when comparing schizophrenics with various other nosological groups. Lastly we review the results of partitioning the schizophrenics in different subgroups: clinically improved *versus* impaired patients, patients who maintain their diagnosis of schizophrenia *versus* those who receive other diagnoses. A final approach in this chapter probes into the action of LSD-25 on metaphoric behavior.

Chapter V presents the results of a follow-up study over five years. The procedure, group and ways of presenting the results are described in detail. Then the results are presented of dividing the patients according to clinical evaluation, nosological classification and a social criterion related to work adjustment. The results are presented in terms of relative frequencies of various response categories, quotients between various categories, and proportions of relevant and irrelevant responses over items arranged according to "difficulty".

Chapter VI is a discussion of the results in terms of the general and specific problems and questions outlined in chapter I.

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APPENDICES

Appendix 1.

PSYCHOMETRIC DATA OF THE MEASURING INSTRUMENTS

A. *The proverbs series*

1. The multiple-choice form

We have evaluated the logical semantic validity of the multiple-choice form of the complete series of proverbs as the mean per cent interjudge agreement between the categorizations of five judges (3 psychologists and 2 psychiatrists) and the scoring scheme of the series: Ar 98, Cr 90, Aw 95, Cw 90 (Brattemo 1962a).

Dureman and Sälde (1959) report coefficients of relibility for the Ar-responses given by normal Ss: 0.87 (KR) and 0.83 (retest).

In our own studies we have obtained the following coefficients in a retest study of 60 normal Ss tested with an interval of 33 days: Ar 0.83, Cr 0.62, Aw 0.67 Cw 0.53 (Brattemo 1962a). Because of the high frequency of Ar-responses in normals there is a restriction of range which results in an underestimation of the coefficients in the other categories.

Estimated in terms of KR-figures the coefficients are:

	Ar	Cr	Aw	Cw
Normal Ss, n=30				
the total series	0.89	0.86	0.56	0.86
Ar-provocing items	0.80	0.74	0.05	0.80
Ar-resistent items	0.69	0.82	0.60	0.84
Depressives, n=30				
the total series	0.82	0.77	0.62	0.49
Ar-provocing items	0.82	0.74	0.28	0.37
Ar-resistent items	0.34	0.48	0.67	0.45
Schizophrenics, n=117				
the total series	0.80	0.63	0.40	0.59
Ar-provocing items	0.67	0.45	0.30	0.58
Ar-resistent items	0.67	0.55	0.25	0.42

2. The free interpretation form

For the free interpretation form in which the evaluation has been made in two different ways we can report the following W-coefficients for interjudge agreement (Brattemo 1967d, Siegel 1956):

a) 3 judges: Ar 0.98, Cr 0.91, Aw 0.79, Cw 0.90

b) 4 judges: Ar 0.97, ACr 0.91, Cr 0.97, Aw 0.92, ACw 0.79, Cw 0.92.

The coefficients of reliability (KR) are (Brattemo 1967d):

	Ar	Cr	Aw	Cw
Depressives, n=30				
the total series	0.85	0.53	0.65	0.52
Ar-provocing items	0.79	0.52	0.53	—0.20
Ar-resistent items	0.63	0.13	0.53	0.42
Schizophrenics, n=117				
the total series	0.88	0.50	0.26	0.66
Ar-provocing items	0.83	0.52	0.09	0.33
Ar-resistent items	0.74	0.27	0.33	0.55

In the neuroleptic group we have estimated the response agreement between the multiple-choice and the free interpretation forms in terms of correlation coefficients. They are computed over the three times of testing: Ar 0.76, Cr 0.65, Aw 0.50, Cw 0.39, A 0.71, R 0.63.

B. *Instruments measuring independent variables*

(a) For *the synonyme test* Dureman and Sälde (1959) report coefficients of reliability of 0.95 (KR) and 0.88 (retest).

(b) In Wing's *Scale for evaluation of socially passive and active behavior* we have found a coefficient of correlation of 0.64 (r_{bis}) between improvement according to the scale and improvement clinically evaluated by a psychiatrist. The agreement between three pairs of judges, estimated as rank correlations, was for "social withdrawal": 0.77, 0.80, 0.56, for "socially embarrasing behavior": 0.37, 0.67, 0.82, and for the total scale: 0.69, 0.59, 0.78 (Brattemo 1962a).

(c) We have estimated the agreement between the *Scale for evaluation of schizophrenic symptoms* with psychiatrically evaluated clinical improvement *versus* unimprovement and/or impairment as criterion and have obtained a coefficient of 0.82 (r_{bis}). The interjudge agreement between evaluations according to the scale made by two psychiatrists resulted in a coefficient of 0.87 (Brattemo 1926a).

d) For the Swedish translation of the *Manifest Anxiety Scale* we have obtained a coefficient of rediability (split-half) of 0.78 (Brattemo and Lassenius 1965).

(e) Because only one experienced psychiatrist has performed the *clinical-psychiatric evaluations* we have no data about their validity or relibility.

Appendix 2.

DATA ABOUT GROUPS INVESTIGATED

Groups	Year of examination	n	Sex	Age M	Age SD	Verbal intelligence M	Verbal intelligence SD	Total time of hospitalization M	Time of present hospitalization M	Age at 1st hospitalization M
Sch_{chr}	1960	30	♀	39.9	9.1	3.9	1.7	10.5 years	8.1 years	23.8
Sch_{sh}	1960	30	♀	37.8	10.8	4.5	1.7	61 weeks	19 weeks	29.3
In	1961	15	♂	32.8	12.1	6.1	2.2	— — —	21 „	30.1
Sch?	1961	25	♀	31.4	9.5	5.1	1.9	21 weeks	12 „	25.6
Neur	1960/61-66	42	♂	37.7	12.1	4.1	2.4	for further data see appendix 3		
D_1	1960/61	30	♀	40.2	9.3	4.5	1.8	39 weeks	10 weeks	32.7
D_2	1965/66	21	♀+♂	52.2	11.7	4.5	1.9	8 „	10 „	50.4
BD	1965/66	33	♂	41.3	14.3	4.4	1.8	— —	— —	— —
N:										
a_1	1960-66	21	♀	14—16		5.5	1.3	— —	— —	— —
„	„	20	♂	„		5.6	1.0	— —	— —	— —
a_2	„	31	♀	19—29		6.0	1.4	— —	— —	— —
„	„	31	♂	„		5.9	1.5	— —	— —	— —
a_3	„	22	♀	30—55		5.9	1.2	— —	— —	— —
„	„	26	♂	„		5.2	1.7	— —	— —	— —
N_a	„	30	♀	39.1	11.5	5.2	1.2	— —	— —	— —
N_d	1965	26	♂	15.1	0.9	4.7	0.8	— —	— —	— —
N_{LSD}	1961	13	♀+♂	29.2	6.5	—	—	— —	— —	— —

Appendix 3.

SOCIAL-PSYCHIATRIC DATA FOR EACH PATIENT IN THE FOLLOW-UP STUDY

Case	1) Age 1960/61	2) Verbal intelligence a	b	3) Marital status 1960/61	4) Change in marital status 1961—1966	5) Place of living 1960/61
1	27	3	6	unmarried	—	rural area
2	16	1	—	unmarried	—	rural area
3	55	5	5	married	—	rural area
4	22	2	3	unmarried	—	town
5	23	7	7	unmarried	—	town
6	49	6	8	unmarried	—	rural area
7	51	3	7	unmarried	—	urban area
8	55	6	8	married	—	town
9	51	1	2	unmarried	—	rural area
10	41	8	8	unmarried	—	town
11	21	3	3	unmarried	—	town
12	42	2	2	married	—	rural area
13	58	1	3	unmarried	—	town
14	27	9	8	unmarried	—	town
15	20	7	6	unmarried	—	town
16	36	6	6	unmarried	—	rural area
17	57	5	—	divorced	—	rural area
18	39	2	2	unmarried	—	town
19	20	6	3	unmarried	—	rural area
20	33	4	4	married	—	rural area
21	55	5	3	unmarried	—	rural area
22	39	6	6	married	—	town
23	35	4	—	married	divorced	town
24	50	4	6	divorced	—	town
25	46	1	2	unmarried	—	rural area
26	28	2	2	unmarried	—	rural area
27	53	2	—	unmarried	—	rural area
28	24	5	3	unmarried	—	rural area
29	39	2	3	divorced	—	rural area
30	31	9	8	unmarried	—	town
31	17	3	3	unmarried	engaged	rural area
32	41	3	3	unmarried	married	town
33	41	1	1	unmarried	—	town
34	38	2	6	unmarried	—	rural area
35	53	3	5	married	—	rural area
36	34	3	4	married	—	town
37	26	8	7	unmarried	married	town
38	46	2	1	unmarried	married	urban area
39	37	9	8	divorced	—	urban area
40	35	3	2	unmarried	—	town
41	30	5	3	unmarried	—	rural area
42	47	5	8	divorced	—	town

Expressed in stanines and corrected for age.
a=1960/61
b=1965/66

Case	6) Type of work 1960/61						7) Work adjustment 1961—1966				8) Year of 1st admission	9) Time of present hospitalization (n weeks) 1960/61
	A	B	C	D	E	F	G	H	J	K		
1					×				×		1958	9
2				×						×	1960	>3 years
3			×				×				1950	8
4				×						×	1960	19
5				×					×		1960	13
6						×				×	1958	15
7		×					×				1960	7
8			×							×	1959	4
9				×						×	1950	10
10	×							×			1950	5
11					×					×	1960	44
12						×				×	1947	6
13						×				×	1960	6
14	×									×	1960	23
15					×		×				1961	9
16			×							×	1960	8
17			×					×			1956	12
18			×					×			1943	6
19					×					×	1949	22
20				×			×				1958	11
21					×					×	1957	7
22			×				×				1953	10
23			×				×				1959	6
24				×						×	1957	7
25				×						×	1957	8
26			×							×	1961	6
27		×						×			1953	17
28					×				×		1954	22
29		×					×				1961	14
30					×			×			1956	12
31					×		×				1961	13
32				×			×				1960	11
33				×			×				1949	12
34		×								×	1951	14
35					×					×	1954	5
36			×							×	1959	6
37	×						×				1961	3
38					×					×	1957	4
39			×							×	1959	10
40				×				×			1955	10
41				×				×			1958	6
42				×						×	1948	10

A Work demanding education above primary school
B Farmer
C Skilled industrial or other type of work
D Unskilled industrial or other type of work
E No work or irregular work
F Retired of social/medical reasons

G Pat. works in his ordinary job
H Pat. can do simpler work than before present admission
J Pat. works irregularly
K Pat. is retired

Case	10) Times and numbers of hospitalization					11) Form of schizophrenia
	>3 yrs n=1	1—3 yrs n=1—2	<1 year n=1—2	n ≧3	not hosp.	
1			a	b		paranoid
2	b				a	hebephrenic
3			a b			paranoid
4		b			a	catatonic
5		b			a	hebephrenic
6		b	a			paranoid
7					a b	paranoid
8			b	a		paranoid
9			a		b	simplex
10			a		b	paranoid
11			a	b		hebephrenic
12	b			a		paranoid
13		b			a	paranoid
14	b				a	paranoid
15					a b	hebephrenic
16			a	b		simplex
17			a		b	paranoid
18			a	b		catatonic
19	b		a			hebephrenic
20			a	b		catatonic
21			a		b	simplex
22		b	a			catatonic
23		b		a		paranoid
24			a b			paranoid
25				a b		catatonic
26		b			a	paranoid
27			a b			paranoid
28		a		b		hebephrenic
29					a b	paranoid
30			b	a		paranoid
31			b		a	catatonic
32			a b			paranoid
33				a b		paranoid
34			b	a		paranoid
35			b	a		paranoid
36			a	b		paranoid
37			b		a	paranoid
38			a		b	paranoid
39	b		a			paranoid
40	a		b			paranoid
41			a	b		paranoid
42	b		a			paranoid

a = before present hospitalization (1960/61)
b = during 1961—1966

Case	1) 12) Duration of psychiatric prescriptions 1961—1966	13) General psychiatric status at 2nd and 3rd examinations: a) improved Ss		b) unimproved and/or impaired Ss	
1	1—3 years	2	3		
2	>3 „			2	3
3	>3 „	2			3
4	1—3 „	2			3
5	1—3 „	2	3		
6	>3 „	2	3		
7	<1 „			2	3
8	>3 „	2	3		
9	<1 „	2	3		
10	1—3 „	2			3
11	>3 „			2	3
12	>3 „	2	3		
13	1—3 „	2			3
14	>3 „	2			3
15	<1 „	2	3		
16	>3 „	2			3
17	<1 „	2			3
18	>3 „	2	3		
19	>3 „		3	2	
20	>3 „	2	3		
21	1—3 „			2	3
22	1—3 „	2	3		
23	1—3 „	2	3		
24	1—3 „	2			3
25	>3 „	2	3		
26	>3 „	2			3
27	>3 „			2	3
28	1—3 „			2	3
29	<1 „	2	3		
30	>3 „			2	3
31	1—3 „	2	3		
32	1—3 „	2	3		
33	<1 „	2	3		
34	1—3 „		3	2	
35	1—3 „	2			3
36	>3 „	2	3		
37	<1 „	2			3
38	1—3 „		3	2	
39	>3 „			2	3
40	1—3 „	2	3		
41	1—3 „	2			3
42	1—3 „		3	2	

2 = examination at discharge 1961
3 = Reexamination 1965/66

1) We have not found it to be in line with this study to specify the various psychopharmaca prescribed. We have therefore reported only the approximative time during which each patient has been treated. We have of course no guarantee that patients staying outside the clinicc have medicated regularly. Pharmaca prescribed have been mainly chlorpromazine or other sedative neuroleptics.

[1]
14) Ratings of symptoms 15) Ward behavior according to Wing's scale

Case				A. Social withdrawal			B. Socially disturbing behavior		
Exam.	1	2	3	1	2	3	1	2	3
1	18	7	12	13	9	11	6	6	7
2	17	17	—	13	15	—	7	9	—
3	15	8	14	8	5	5	7	6	7
4	19	7	14	13	7	9	11	7	7
5	17	10	10	6	5	5	11	6	6
6	17	7	9	9	5	5	8	6	6
7	16	10	10	8	9	7	10	6	8
8	16	7	11	9	8	5	8	6	6
9	17	7	12	11	7	9	6	7	6
10	18	7	11	10	5	5	7	6	6
11	15	16	15	12	9	7	9	7	8
12	14	7	9	8	5	5	7	6	6
13	15	7	9	6	5	9	9	6	6
14	13	10	12	7	5	6	10	6	6
15	12	10	10	10	5	5	7	6	7
16	14	9	14	5	6	8	7	6	9
17	18	19	—	14	5	—	11	6	—
18	14	7	7	5	5	5	6	6	6
19	17	15	9	11	8	6	7	8	7
20	11	7	7	7	5	5	8	6	6
21	11	8	9	5	5	5	6	6	6
22	15	7	8	10	5	9	10	6	8
23	10	7	—	6	5	—	7	6	—
24	10	9	13	5	5	6	7	6	7
25	17	8	10	11	5	5	8	6	6
26	18	11	19	12	5	10	12	6	7
27	14	9	—	9	5	—	7	6	—
28	15	15	17	9	10	13	10	12	7
29	17	9	7	11	5	5	8	6	6
30	11	11	14	8	5	8	8	6	6
31	18	9	6	12	8	5	13	7	6
32	20	7	6	9	5	5	7	7	6
33	17	10	10	9	5	5	7	6	7
34	18	12	12	6	5	10	10	7	6
35	14	7	14	8	5	6	6	6	6
36	13	7	7	8	5	5	7	6	6
37	13	7	7	8	5	5	7	6	6
38	11	8	12	5	5	5	6	7	6
39	14	13	12	5	5	10	7	7	8
40	13	8	8	10	5	5	8	6	6
41	16	8	14	9	5	9	7	6	6
42	16	11	11	9	7	11	6	6	6

1) The figures are sum of symptoms and give thus an estimation of symptom intensity.

Appendix 4.

SUMMARY OF SOCIAL-PSYCHIATRIC DATA FOR THE WHOLE GROUP AND SUBGROUPS OF PATIENTS DESCRIBED IN APPENDIX 3

	The whole group n=42		Psychiatric evaluation at 2nd examination: Improved n=30		Psychiatric evaluation at 2nd examination: Unimproved and/or impaired n=12		Psychiatric evaluation at 3rd examination: Improved n=17		Psychiatric evaluation at 3rd examination: Unimproved and/or impaired n=14		Not paranoid n=14		Paranoid n=17	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
1) *Age*														
exam. 1/2	37.7	12.1	38.7	11.5	36.6	13.4	37.1	10.3	39.0	13.5	32.4	11.8	38.9	11.0
exam. 3	42.4	12.9	42.9	11.9	41.1	13.6	41.9	10.6	43.5	13.4	36.9	12.0	43.2	11.1
2) *Verbal intelligence*														
exam. 1/2	4.1	2.4	4.1	2.3	4.3	2.6	3.5	2.0	4.4	2.2	4.5	2.2	4.2	2.2
exam. 3	4.7	2.6	4.5	2.2	5.0	2.5	4.1	2.2	4.6	1.9	4.1	1.9	5.0	2.2
3) *Marital status 1960/61*	%		%		%		%		%		%		%	
engaged	0		0		0		0		0		0		0	
married	19		27		0		29		14		14		18	
divorced	12		10		17		61		14		0		12	
unmarried	69		63		83		65		72		86		70	
4) *Change in marital status 1961—1966*	n		n		n		n		n		n		n	
engaged	1		1		0		1		0		1		0	
married	3		2		1		1		1		0		2	
divorced	1		1		0		0		0		0		0	
5) *Place of living 1960/61*	%		%		%		%		%		%		%	
town	45		53		25		53		36		43		53	
urban area	7		0		25		0		14		0		6	
rural area	48		47		50		47		50		57		41	

	The whole group n=42	Psychiatric evaluation at 2nd examination		Psychiatric evaluation at 3rd examination			
		Improved n=30	Unimproved and/or impaired n=12	Improved n=17	Unimproved and/or impaired n=14	Not paranoid n=14	Paranoid n=17
6) *Type of work 1960/61*	%	%	%	%	%	%	%
A	7	10	0	0	7	7	6
B	9	3	25	6	7	0	12
C	24	30	8	23	29	21	18
D	29	33	17	41	21	36	28
E	24	14	50	18	29	36	18
F	7	10	0	12	7	0	18
7) *Work adjustment 1961—1966*	%	%	%	%	%	%	%
G	26	36	8	41	21	21	28
H	17	17	17	12	7	7	18
J	7	7	8	12	7	14	6
K	50	40	67	35	65	58	48
8) *Year of 1st admission*	%	%	%	%	%	%	%
1960—1961	33	37	25	29	50	44	35
1955—1959	37	36	33	41	29	21	41
1950—1954	19	17	25	12	21	21	12
1945—1949	9	7	17	12	0	7	12
1940—1944	2	3	0	6	0	7	0
9) Time of present hospitalization (n weeks) 1960/61							
Q_3	13.5	11.9	22.0	12.3	10.0	19.5	10.4
Md	9.7	8.8	13.0	10.0	7.1	11.5	8.0
Q_1	6.3	6.0	7.5	7.8	6.0	8.3	6.2

	The whole group n=42		Psychiatric evaluation at 2nd examination: Improved n=30		Psychiatric evaluation at 2nd examination: Unimproved and/or impaired n=12		Psychiatric evaluation at 3rd examination: Improved n=17		Psychiatric evaluation at 3rd examination: Unimproved and/or impaired n=14		Not paranoid n=14		Paranoid n=17	
10) *Times and numbers of* hospitalization	%		%		%		%		%		%		%	
	a	b	a	b	a	b	a	b	a	b	a	b	a	b
>3 years, n=1—2	2	14	3	7	0	33	6	6	0	7	0	14	6	12
1—3 „ , n=1—2	2	17	0	23	8	0	0	18	7	21	7	21	0	18
<1 „ , n=1—2	50	26	47	27	58	25	47	23	50	29	57	7	48	40
n=≧3	20	24	20	27	17	17	29	35	7	29	7	44	18	18
not hospitalized	26	19	30	16	17	25	18	18	36	14	29	14	28	12

11) *Form of schizophrenia*	%	%	%	%	%	%	%
paranoid	64	66	58	53	65	0	100
hebephrenic	14	7	34	12	14	36	0
catatonic	14	20	0	29	7	44	0
simplex	8	7	8	6	14	20	0

12) *Duration of psychiatric prescriptions 1961—1966*	%	%	%	%	%	%	%
<1 years	17	20	8	42	36	50	34
1—3 „	43	43	42	35	50	43	48
>3 „	40	37	50	23	14	7	18

		The whole group n=42	Psychiatric evaluation at 2nd examination: Improved n=30	Psychiatric evaluation at 2nd examination: Unimproved and/or impaired n=12	Psychiatric evaluation at 3rd examination: Improved n=17	Psychiatric evaluation at 3rd examination: Unimproved and/or impaired n=14	not paranoid n=14	Paranoid n=17
13) *General psychiatric status*		%	%	%	%	%	%	%
Improved 2nd exam.		**71**						
Unimproved/ **impaired** 2nd exam		29						
Improved 2nd exam. **Improved** 3rd exam.			60		100		88	78
Unimproved/impaired 2nd exam. Improved 3rd examn				33			**12**	22
Improved 2nd exam. Unimproved/impaired 3rd examn.			40			65	50	75
Unimproved/impaired 2nd exam. Unimproved/impaired 3rd exam.				67		35	50	25
14) *Sum of symptoms*								
Exam. 1	Q_3	17.1	17.4	16.5	17.3	15.7	17.1	16.9
	Md	15.3	15.8	15.0	16.6	14.8	15.3	15.3
	Q_1	13.5	13.5	11.5	13.6	13.7	13.8	12.9
Exam. 2	Q_3	10.4	9.1	15.0	8.9	11.0	10.0	10.4
	Md	8.3	7.4	11.5	7.4	8.5	8.5	8.0
	Q_1	7.2	7.3	9.5	6.9	7.4	7.2	7.1
Exam. 3	Q_3	12.4	12.9	14.0	10.2	14.4	12.5	13.4
	Md	10.5	10.4	12.0	8.8	13.7	10.0	10.3
	Q_1	8.5	7.6	10.5	7.0	10.0	8.0	8.5

		The whole group n=42	Psychiatric evaluation at 2nd examination: Improved n=30	Psychiatric evaluation at 2nd examination: Unimproved and/or impaired n=12	Psychiatric evaluation at 3d examination: Improved n=17	Psychiatric evaluation at 3d examination: Unimproved and/or impaired n=14	Not paranoid n=14	Paranoid n=17
15) *Ward behavior*								
A. Social withdrawal								
Exam. 1	Q_3	10.6	10.5	11.0	10.7	9.3	11.4	9.4
	Md	8.7	9.0	8.7	9.4	8.0	9.5	8.4
	Q_1	7.0	7.3	5.8	8.1	5.4	6.0	7.7
Exam. 2	Q_3	6.5	5.4	9.5	5.5	7.0	9.0	5.4
	Md	5.2	5.1	6.5	5.1	5.3	5.5	5.1
	Q_1	4.8	4.8	5.0	4.8	4.9	5.0	4.8
Exam. 3	Q_3	8.7	8.5	10.5	5.4	9.3	8.7	9.4
	Md	5.5	5.3	9.0	5.1	7.5	6.0	6.0
	Q_1	5.0	4.9	6.6	4.8	5.7	5.1	5.0
B. Socially embarassing behavior								
Exam. 1	Q_3	9.0	9.5	9.8	8.1	9.7	10.4	8.4
	Md	7.4	7.4	7.4	7.6	7.3	8.5	7.3
	Q_1	6.7	6.8	6.6	6.7	6.8	6.8	6.7
Exam. 2	Q_3	6.5	6.4	8.4	6.4	6.7	7.1	6.4
	Md	6.2	6.1	6.8	6.1	6.2	6.4	6.1
	Q_1	5.8	5.7	6.1	5.8	5.8	5.9	5.8
Exam. 3	Q_3	6.9	7.0	8.1	6.5	7.7	7.3	6.9
	Md	6.3	6.3	6.8	6.1	6.9	6.4	6.3
	Q_1	5.9	5.9	6.0	5.8	6.2	5.9	5.9

Appendix 5.

TABLES AND FIGURES OF THE RESULTS OF PROVERBS INTERPRETATIONS IN THE FOLLOW-UP GROUP EXAMINED AT THREE TIMES

Legend:
Exam. = examination 1 and 2 undertaken 1960/1961, Examination 3 undertaken 1965/1966.
Sch_{chr} = chronic schizophrenic group, pp. 38
Not paranoid patients = patients diagnosed as hebephrenic, catatonic and schizophrenia simplex.

Ar = abstract right responses
ACr = abstract-concrete right responses
Cr = concrete right responses
Aw = abstract wrong responses
ACw = abstract-concrete wrong responses
Cw = concrete wrong responses
A = in both forms of interpretations: sum of Ar and Aw responses
R = in multiple-choice form: sum of Ar and Cr responses,
in free interpretation form: sum of Ar, ACr and Cr responses
N = nonsense responses
0 = refusals

Clinically improved patients						
Exam	1 n=30		2 n=30		3 n=17	
	M	SD	M	SD	M	SD
Ar	7.53	4.54	7.70	5.36	6.53	5.49
Cr	7.30	3.49	8.80	4.44	9.41	5.20
Aw	3.83	2.10	2.70	1.81	2.29	1.84
Cw	3.33	2.57	2.80	2.12	3.76	3.18
A	11.37	4.45	10.40	5.63	8.82	6.31
R	14.83	3.96	16.50	3.41	15.94	3.35

Clinically unimproved and/or impaired patients								
Exam.	1 n=12		2 n=12		3 n=14		Sch chr n=30	
	M	SD	M	SD	M	SD	M	SD
Ar	7.17	5.19	8.75	5.31	6.79	3.97	5.46	3.07
Cr	7.17	2.99	7.33	3.35	8.79	3.61	8.23	3.04
Aw	2.50	1.80	3.25	1.83	3.07	2.37	3.53	2.42
Cw	5.17	3.39	2.67	2.62	3.36	2.41	4.77	2.73
A	9.67	5.36	12.00	4.51	9.86	4.29	9.00	3.97
R	14.34	3.79	16.08	3.45	15.98	3.74	13.70	3.32

Table 1. Means and standard deviations of proverbs examinations, the multiple-choice form of the total scale, distributed on various categories of interpretations, made on subgroups of clinically improved *versus* unimproved and/or impaired patients with chronic schizophrenic patients as comparison group.

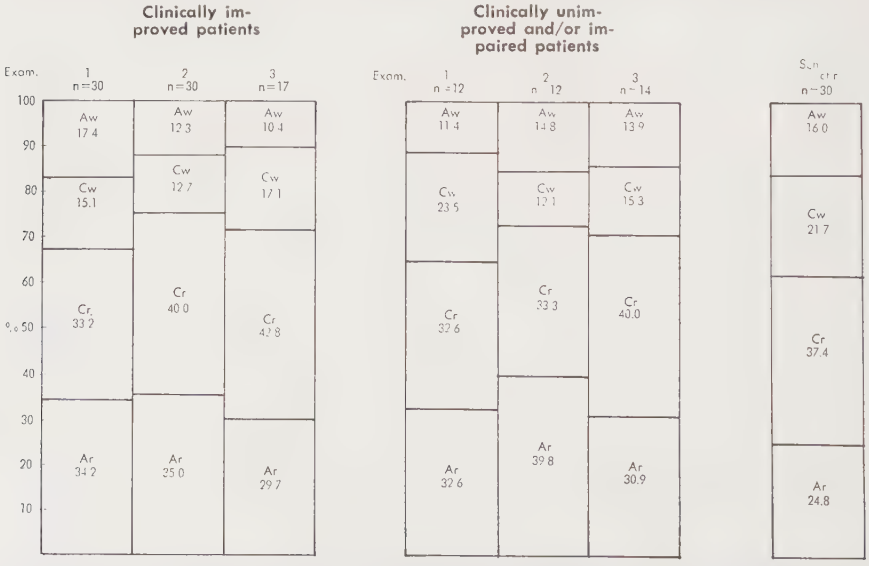

Figure 1. Distribution in per cent of proverbs examinations, the multiple-choice form of the total scale, on various categories of interpretations and on subgroups of clinically improved *versus* unimproved and/or impaired patients with chronic schizophrenic patients as comparison group.

Clinically improved patients						
Exam.	1 n=30		2 n=30		3 n=17	
	M	SD	M	SD	M	SD
Ar	4.67	2.44	5.30	3.30	4.35	3.34
Cr	3.47	1.98	3.47	2.49	3.71	2.78
Aw	1.47	1.14	1.03	3.21	1.12	1.02
Cw	1.40	1.47	1.20	1.40	1.82	1.89
A	6.14	2.43	6.33	3.40	5.47	3.45
R	8.14	1.65	8.77	1.41	8.06	2.18

Clinically unimproved and/or impaired patients								
Exam.	1 n=12		2 n=12		3 n=14		Sch chr n=30	
	M	SD	M	SD	M	SD	M	SD
Ar	3.92	2.93	5.83	3.08	4.71	2.94	3.53	2.33
Cr	3.67	2.21	2.58	1.62	3.50	2.38	3.63	1.97
Aw	1.33	0.94	1.50	0.90	1.14	1.06	1.40	1.25
Cw	2.09	1.75	1.08	0.77	1.64	1.23	2.43	1.73
A	5.25	3.25	7.33	3.57	5.85	2.85	4.93	2.43
R	7.59	1.61	8.41	3.92	8.21	1.74	7.16	2.02

Table 2. Means and standard deviations of proverbs examinations, the multiple-choice form of the Ar-provocing subscale, distributed on various categories of interpretations, made on subgroups of clinically improved *versus* unimproved and/or impaired patients with chronic schizophrenic patients as comparison group.

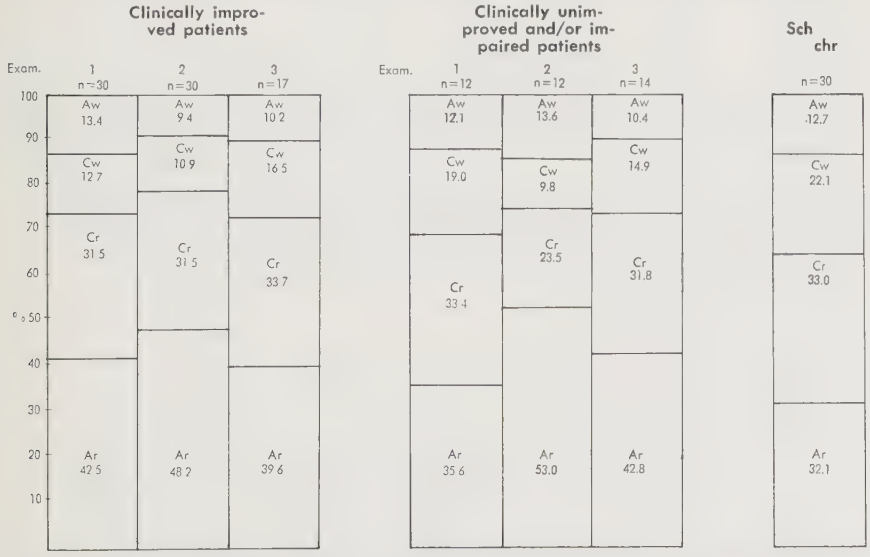

Figure 2. Distribution in per cent of proverbs examinations, the multiple-choice form of the Ar-provocing subscale, on various categories of interpretations and on subgroups of clinically improved *versus* unimproved and/or impaired patients with chronic schizophrenic patients as comparison group.

Clinically improved patients						
Exam.	1 n=30		2 n=30		3 n=17	
	M	SD	M	SD	M	SD
Ar	8.20	5.35	10.87	6.32	6.18	5.72
ACr	2.00	1.59	2.27	1.63	1.59	1.28
Cr	2.40	2.29	3.97	3.79	4.18	3.57
Aw	2.03	1.72	1.83	1.48	1.18	1.25
ACw	0.87	0.92	0.57	0.78	0.65	0.84
Cw	2.57	3.10	1.57	2.12	1.88	2.30
A	10.23	5.90	12.70	6.38	7.36	6.59
R	12.60	5.33	17.11	3.45	11.95	5.63
N	1.33	1.83	0.33	0.75	1.35	2.61
O	2.60	4.32	0.60	0.98	5.00	7.20

Clinically unimproved and/or impaired patients								
Exam.	1 n=12		2 n=12		3 n=14		Sch_{chr} n=30	
	M	SD	M	SD	M	SD	M	SD
Ar	7.67	5.82	10.67	6.86	6.86	6.10	5.00	4.58
ACr	0.75	0.83	1.92	3.91	2.64	2.41	1.43	1.50
Cr	1.67	2.05	1.75	1.53	2.36	3.29	3.47	3.00
Aw	2.17	1.77	2.08	3.12	1.36	1.58	1.53	1.96
ACw	0.75	1.00	0.67	1.10	0.50	0.73	0.73	0.93
Cw	1.67	2.01	0.17	0.37	1.29	1.39	3.23	3.03
A	9.84	5.29	12.75	5.86	8.22	6.52	6.53	5.32
R	10.09	6.73	14.34	7.37	11.86	6.91	9.90	6.49
N	2.33	3.84	1.58	2.78	0.71	1.22	2.07	4.44
O	5.00	6.78	3.17	6.17	6.36	8.41	4.53	6.32

Table 3. Means and standard deviations of proverbs examinations, the free interpretation form of the total scale, distributed on various categories of interpretations, made on subgroups of clinically improved *versus* unimproved and/or impaired patients with chronic schizophrenic patients as comparison group.

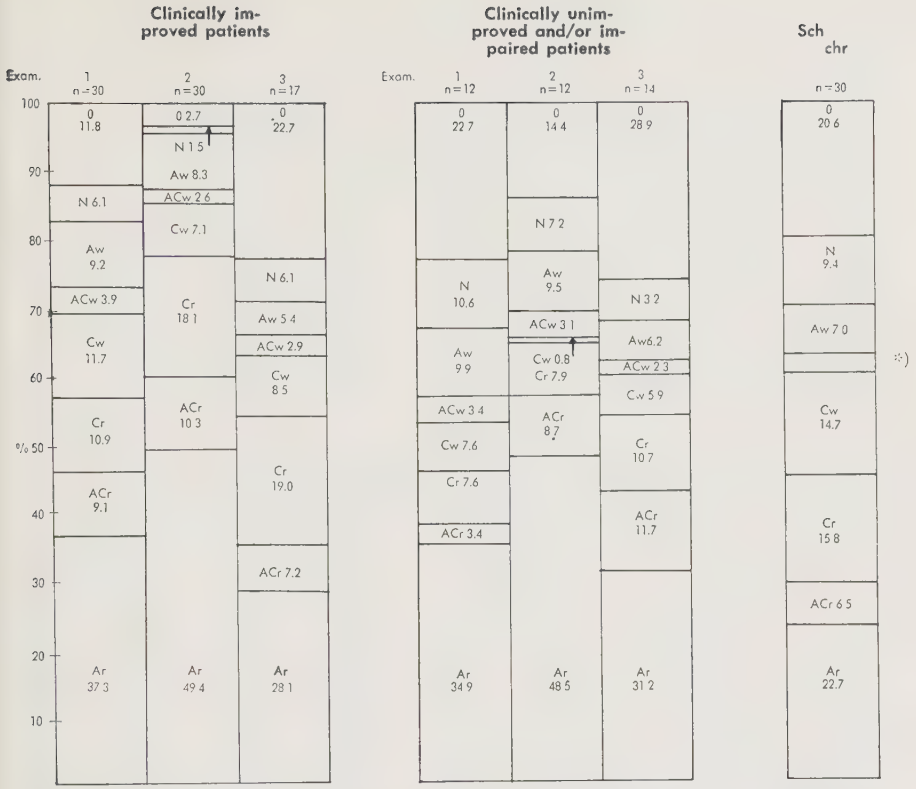

Figure 3. Distribution in per cent of proverbs examinations, the free interpretation form of the total scale, on various categories of interpretations and on subgroups of clinically improved *versus* unimproved and/or impaired patients with chronic schizophrenic patients as comparison group.

*) ACw 3.3

Clinically improved patients						
Exam.	1 n=30		2 n=30		3 n=17	
	M	SD	M	SD	M	SD
Ar	5.33	3.17	6.27	3.43	4.23	3.37
ACr	0.90	0.91	0.97	0.91	0.88	0.83
Cr	1.10	1.51	1.77	2.17	1.70	1.84
Aw	0.70	1.04	0.73	0.81	0.18	0.51
ACw	0.30	0.53	0.23	0.50	0.06	0.22
Cw	0.93	1.55	0.57	0.95	1.00	1.37
A	6.03	3.23	7.00	3.38	4.41	3.36
R	7.33	3.05	9.01	1.84	6.81	3.33
N	0.83	1.16	0.10	0.40	0.76	1.77
O	0.90	1.72	0.37	0.84	2.18	3.50

Clinically unimproved and/or impaired patients								
Exam.	1 n=12		2 n=12		3 n=14		Sch_{chr} n=30	
	M	SD	M	SD	M	SD	M	SD
Ar	4.83	3.51	6.00	1.20	4.42	3.44	3.83	3.38
ACr	0.25	0.44	0.83	0.98	1.36	1.59	0.40	0.55
Cr	0.50	0.96	0.50	0.65	1.00	1.41	1.43	1.63
Aw	1.25	1.09	1.00	1.68	0.57	0.91	0.77	0.99
ACw	0.17	0.37	0.33	0.62	0.07	0.26	0.33	0.65
CW	0.67	1.31	0.00	—	0.21	0.41	1.20	1.58
A	6.08	3.07	7.00	3.11	4.99	3.54	4.60	3.51
R	5.58	3.68	7.33	3.82	6.78	3.94	5.67	3.72
N	1.17	1.99	0.83	1.35	0.36	0.61	1.10	2.36
O	2.17	1.05	1.50	3.04	3.00	4.26	1.93	3.30

Table 4. Means and standard devations of proverbs examinations, the free interpretation form of the Ar-provocing subscale, distributed on various categories of interpretations, made on subgroups of clinically improved *versus* unimproved and/or impaired patients with chronic schizophrenic patients as comparison group.

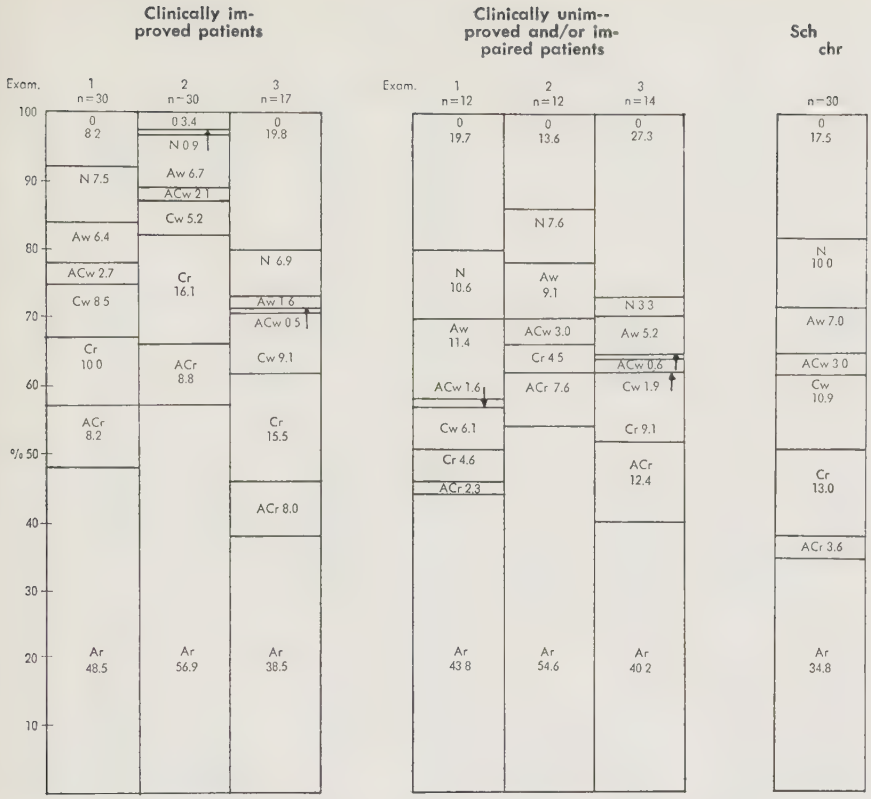

Figure 4. Distribution in per cent of proverbs examinations, the free interpretation form of the Ar-provocing subscale, on various categories of interpretations and on subgroups of clinically improved *versus* unimproved and/or impaired patients with chronic schizophrenic patients as comparison group.

Exam.	1/2		2/3		
	U	z	U	z	
Ar	145.0	0.98	90.5	1.13	
Cr	151.5	0.79	109.5	0.38	
Aw	76.5	2.88[4]	99.5	0.77	Multiple-choice form
Cw	117.5	1.49	100.5	0.73	of the total scale
A	96.5	2.33[2]	110.5	0.34	
R	179.0	0.03	111.5	0.30	
Ar	119.0	1.70	93.0	1.03	
Cr	126.0	1.50	104.5	0.58	
Aw	121.5	1.63	111.5	0.30	Multiple-choice form
Cw	144.0	1.00	114.0	0.20	of the Ar-provocing
A	97.5	2.30[2]	108.5	0.42	scale
R	178.0	0.06	109.5	0.38	
Ar	176.0	0.11	109.0	0.40	
ACr	138.0	1.17	100.0	0.75	
Cr	142.5	1.04	104.0	0.60	
Aw	171.5	0.24	116.0	0.12	
ACw	158.0	0.61	107.0	0.48	Free interpretation form
Cw	137.0	1.20	118.0	0.04	of the total scale
A	168.5	0.31	109.5	0.38	
R	161.5	0.52	107.5	0.46	
N	163.5	0.46	64.0	2.18[2]	
O	149.0	0.86	114.0	0.20	
Ar	173.0	0.19	115.5	0.14	
ACr	161.0	0.53	118.0	0.04	
Cr	145.0	0.97	116.5	0.10	
Aw	151.5	0.79	98.0	0.83	
ACw	159.5	0.57	114.5	0.18	Free interpretation form
Cw	157.5	0.63	84.0	1.39	of the Ar-provocing
A	169.0	0.31	104.0	0.60	scale
R	179.5	0.01	113.5	0.22	
N	151.5	0.79	90.5	1.13	
O	159.0	0.58	118.0	0.04	

[1]) $p=0.05$, [2]) $p=0.02$, [3]) $p=0.01$, [4]) $p<0.01$

Table 5. Mann-Whitney U-test of significances of net differences, i.e. differences between examinations 1 and 2, respectively 2 and 3, in clinically improved patients subtracted from these differences in clinically unimproved and/or impaired patients.

Group	2/Sch_{chr}		3/Sch_{chr}		
	U	z	U	z	
Ar	123.0	1.59	177.0	0.84	
Cr	150.5	0.82	200.5	0.24	
Aw	169.5	0.29	185.5	0.63	Multiple-choice form
Cw	94.5	2.38[2)]	147.0	1.61	of the total scale
A	117.5	1.74	191.5	0.47	
R	105.5	2.08[1)]	147.0	1.61	
Ar	102.0	2.17[2)]	164.0	1.20	
Cr	138.5	1.16	197.0	0.34	
Aw	163.5	0.46	55.0	4.16[4)]	Multiple-choice form
Cw	97.5	2.30[2)]	160.0	1.28	of the Ar-provocing
A	90.5	2.49[3)]	174.0	0.92	
R	124.0	1.56	150.5	1.52	
Ar	93.0	2.42[3)]	172.0	0.97	
ACr	161.5	0.52	154.0	1.42	
Cr	124.0	1.56	151.0	1.51	
Aw	163.0	0.46	206.5	0.09	
ACw	166.0	0.39	184.0	0.66	Free interpretation form
Cw	54.0	3.51[4)]	122.5	2.23[2)]	of the total scale
A	77.0	2.87[4)]	181.0	0.74	
R	112.0	1.89	160.0	1.28	
N	176.0	0.11	198.0	0.31	
O	122.0	1.62	186.0	0.61	
Ar	122.0	1.62	185.5	0.63	
ACr	142.0	1.06	162.0	1.22	
Cr	127.0	1.48	180.0	0.77	
Aw	175.5	0.13	182.5	0.70	Free interpretation form
ACw	179.0	0.03	168.5	1.06	of the Ar-provocing
Cw	78.0	2.84[4)]	121.0	2.27[2)]	scale
A	110.5	1.94[1)]	193.0	0.43	
R	135.0	1.25	152.0	1.48	
N	175.0	0.13	118.5	2.33[2)]	
O	150.5	0.82	205.0	1.28	

[1)] $p=0.05$, [2)] $p=0.02$, [3)] $p=0.01$, [4)] $p<0.01$

Table 6. Mann-Whitney U-test of significances of differences between the chronic schizophrenic group (Sch_{chr}) and the neuroleptic group at 2nd and at 3rd examinations.

Not paranoid patients
n=14

Exam.	1		2		3	
	M	SD	M	SD	M	SD
Ar	7.14	4.21	8.00	4.90	7.86	5.99
Cr	8.64	3.06	8.64	4.75	8.57	4.92
Aw	2.71	1.67	3.29	1.79	2.86	1.67
Cw	3.50	2.03	2.07	1.83	2.71	2.52
A	9.85	4.22	11.29	5.23	10.72	6.15
R	15.78	2.46	16.64	3.37	16.43	3.16

Paranoid patients
n=17

Exam.	1		2		3	
	M	SD	M	SD	M	SD
Ar	7.59	4.42	8.12	5.60	7.71	4.91
Cr	6.71	3.56	8.35	4.21	8.24	4.28
Aw	3.76	3.70	2.53	1.82	2.59	2.35
Cw	3.94	3.25	3.00	2.57	3.47	2.45
A	11.35	4.80	10.66	6.00	10.88	5.28
R	14.29	3.29	16.47	2.81	15.94	3.59

Table 7. Means and standard deviations of proverbs examinations, the multiple-choice form of the total scale, distributed on various categories of interpretations, made on subgroups of not paranoid and paranoid patients.

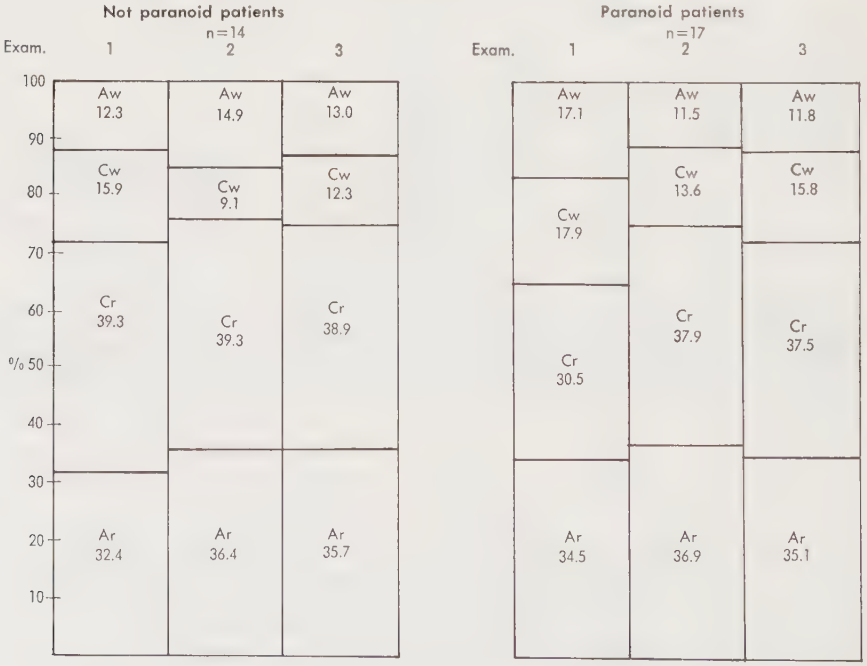

Figure 5. Distribution in per cent of proverbs examinations, the multiple-choice form of the total scale, on various categories of interpretations and on subgroups of not paranoid and paranoid patients.

Not paranoid patients
n=14

Exam.	1		2		3	
	M	SD	M	SD	M	SD
Ar	4.14	2.39	5.79	2.96	4.29	3.26
Cr	4.07	2.19	3.28	2.26	3.86	2.59
Aw	1.36	0.97	1.14	1.19	1.14	1.09
Cw	1.43	1.18	0.79	0.94	1.71	1.62
A	5.50	2.53	6.93	2.89	5.43	3.35
R	8.21	1.42	9.07	1.33	8.15	2.03

Paranoid patients
n=17

Exam.	1		2		3	
	M	SD	M	SD	M	SD
Ar	4.12	3.06	5.12	3.60	5.41	3.34
Cr	3.65	2.35	3.18	2.55	3.06	2.56
Aw	1.41	1.14	1.29	1.19	1.18	1.25
Cw	1.82	1.76	1.41	1.54	1.35	1.37
A	5.53	3.53	6.41	3.99	6.59	3.14
R	7.77	3.02	8.30	2.34	8.47	1.91

Table 8. Means and standard deviations of proverbs examinations, the multiple-choice form of the Ar-provocing subscale, distributed on various categories of interpretations, made on subgroups of not paranoid and paranoid patients.

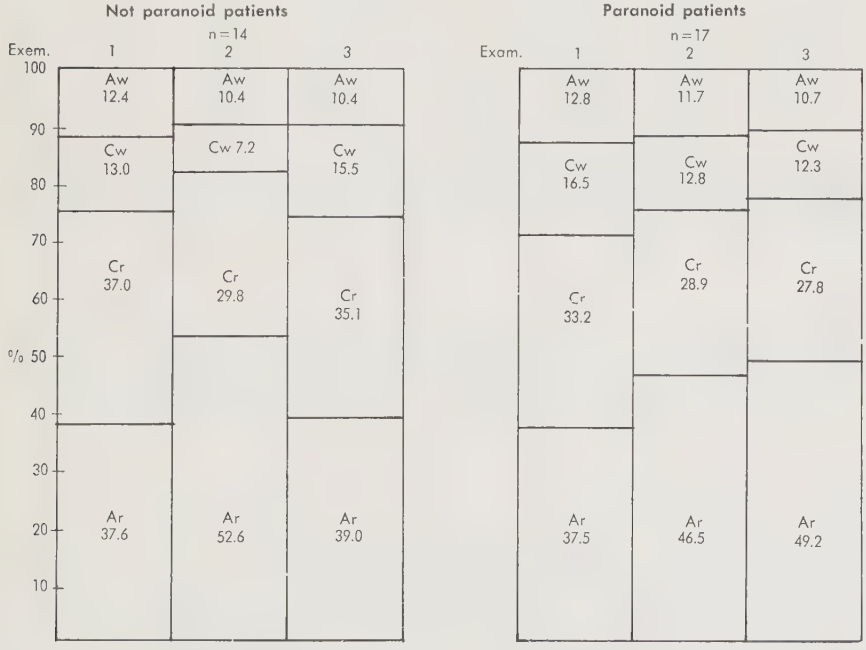

Figure 6. Distribution in per cent of proverbs examinations, the multiple-choice form of the Ar-provocing subscale on various categories of interpretations and on subgroups of not paranoid and paranoid patients.

Not paranoid patients
n=14

Exam.	1		2		3	
	M	SD	M	SD	M	SD
Ar	9.21	5.52	12.14	5.01	7.21	5.75
ACr	1.43	1.59	2.79	1.93	1.64	1.63
Cr	1.78	1.78	3.07	2.76	2.57	3.02
Aw	1.50	1.24	1.50	1.24	1.50	1.55
ACw	0.64	0.72	0.21	0.41	0.43	0.62
Cw	1.57	2.35	0.78	1.57	1.07	2.19
A	10.71	5.76	13.64	5.15	8.71	6.59
R	12.42	5.19	18.00	3.12	11.42	6.38
N	1.14	1.41	0.07	0.26	1.78	2.70
O	4.71	5.35	1.43	2.41	5.78	7.32

Paranoid patients
n=17

Exam.	1		2		3	
	M	SD	M	SD	M	SD
Ar	7.41	5.46	11.18	7.09	8.43	6.43
ACr	1.71	1.36	1.41	1.46	2.00	2.33
Cr	2.53	2.79	3.18	3.53	2.29	2.98
Aw	2.82	2.12	2.47	2.77	0.94	0.98
ACw	0.82	0.85	0.71	0.82	0.65	0.84
Cw	3.12	3.48	1.41	2.14	1.29	1.56
A	10.12	5.85	13.65	6.46	9.41	7.26
R	11.65	6.21	15.76	4.44	12.76	7.04
N	2.53	3.57	1.00	2.11	0.06	0.26
O	1.18	2.55	0.64	0.84	6.29	8.16

Table 9. Means and standard deviations of proverbs examinations, the free interpretation form of the total scale, distributed on various categories of interpretations, made on subgroups of not paranoid and paranoid patients.

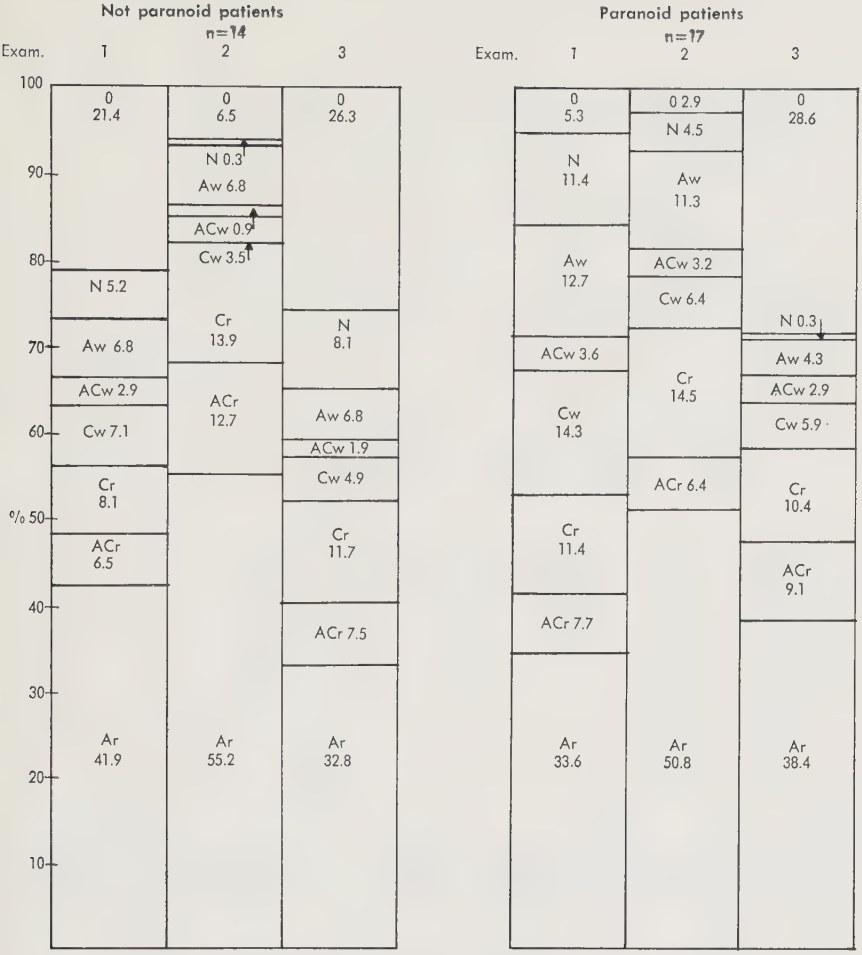

Figure 7. Distribution in per cent of proverbs examinations, the free interpretation form of the total scale, on various categories of interpretations and on subgroups of not paranoid and paranoid patients.

Not paranoid patients
n=14

Exam.	1		2		3	
	M	SD	M	SD	M	SD
Ar	5.86	3.04	6.93	2.55	5.21	3.65
ACr	0.36	0.61	1.14	1.13	0.57	0.72
Cr	0.64	0.72	1.07	1.22	1.00	1.20
Aw	0.86	0.92	0.64	0.72	0.50	0.73
ACw	0.21	0.41	0.07	0.26	0.00	—
Cw	0.50	0.98	0.29	0.79	0.43	1.29
A	6.72	2.99	7.57	2.44	5.71	3.63
R	6.86	2.87	9.14	1.77	6.78	3.65
N	0.79	1.08	0.07	0.26	1.00	1.81
O	1.79	2.66	0.79	1.32	2.29	3.41

Paranoid patients
n=17

Exam.	1		2		3	
	M	SD	M	SD	M	SD
Ar	4.94	3.31	6.53	3.93	5.00	3.53
ACr	0.82	0.71	0.53	0.77	1.18	1.50
Cr	1.18	1.95	1.41	2.49	1.06	1.51
Aw	1.06	1.35	1.00	1.49	0.06	0.24
ACw	0.35	0.59	0.35	0.59	0.12	0.32
Cw	1.18	1.89	0.41	0.77	0.47	0.69
A	6.00	3.14	7.53	3.53	5.06	3.59
R	6.94	3.52	8.47	3.23	7.24	3.89
N	1.24	1.86	0.29	1.00	0.00	—
O	0.24	0.73	0.29	0.46	3.12	4.16

Table 10. Means and standard deviations of proverbs interpretations, the free interpretation form of the Ar-provocing subscale, distributed on various categories of interpretations, made on subgroups of not paranoid and paranoid patients.

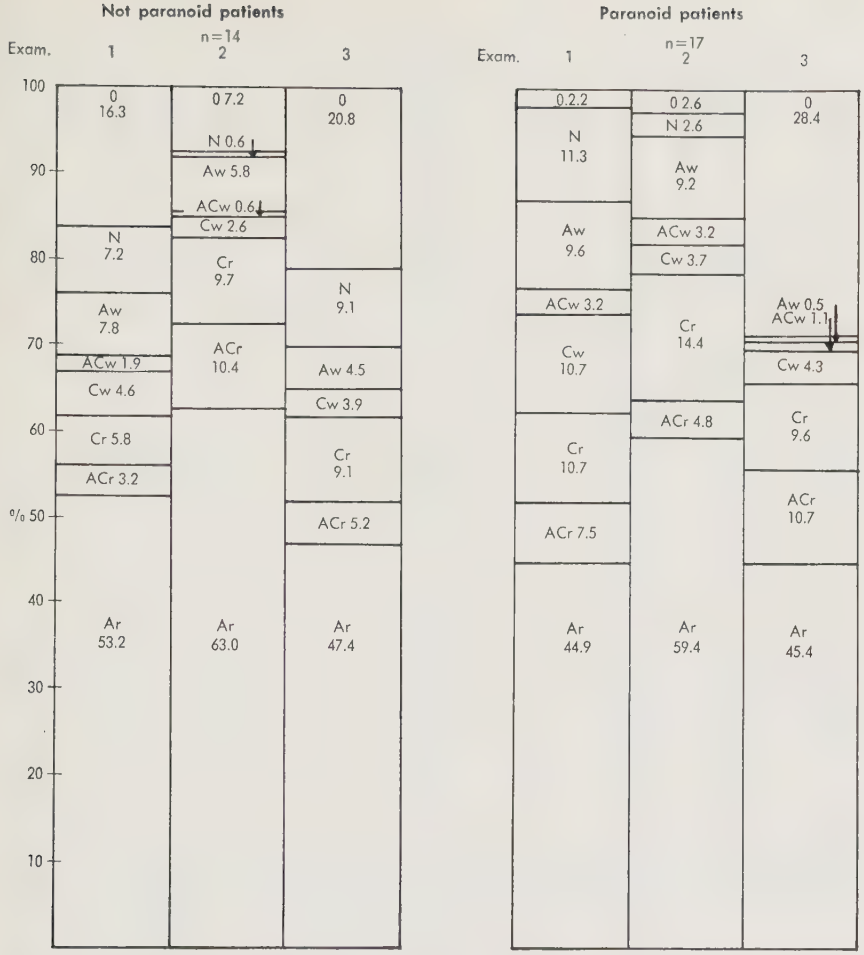

Figure 8. Distribution in per cent of proverbs examinations, the free interpretation form of the Ar-provocing subscale, on various categories of interpretations and on subgroups of not paranoid and paranoid patients.

Exam.	1		3		
	U	z	U	z	
Ar	113.5	0.22	118.0	0.04	
Cr	99.5	0.77	118.5	0.02	
Aw	103.0	0.63	90.0	1.15	Multiple-choice form of the total scale
Cw	109.5	0.38	96.5	0.89	
A	117.0	0.08	113.0	0.24	
R	85.5	1.33	112.5	0.26	
Ar	117.5	0.06	112.5	0.26	
Cr	116.0	0.12	107.5	0.46	
Aw	105.0	0.56	109.5	1.38	Multiple-choice form of the Ar-provocing scale
Cw	118.5	0.02	115.5	0.14	
A	110.5	0.34	108.5	0.42	
R	117.5	0.06	108.5	0.42	
Ar	97.0	0.83	115.5	0.14	
ACr	85.0	1.35	105.5	0.54	
Cr	106.5	0.50	118.5	0.02	
Aw	87.0	1.27	101.5	0.69	
ACw	99.0	0.79	104.0	0.60	Free interpretation form of the total scale
Cw	79.5	1.57	99.5	0.77	
A	112.0	0.28	115.5	0.14	
R	113.0	0.24	81.0	1.51	
N	100.5	0.74	72.5	1.85	
O	52.5	2.64[3]	110.5	0.34	
Ar	102.0	0.67	118.0	0.04	
ACr	75.5	1.73	98.0	0.83	
Cr	118.5	0.02	114.0	0.20	
Aw	118.0	0.04	97.0	0.87	
ACw	108.0	0.44	105.0	0.56	Free interpretation form of the Ar-provocing scale
Cw	95.5	0.93	95.5	0.93	
A	108.5	0.42	110.0	0.36	
R	106.0	0.52	99.5	0.77	
N	109.5	0.38	68.5	2.00[1]	
O	57.5	2.44[3]	116.0	0.12	

[1]) p=0.05, [2])p=0.02, [3]) p=0.01, [4]) p<0.01

Table 11. Mann Whitney U-test of significances of differences between paranoid and not paranoid patients at examinations 1 and 3.

Exam.	1/2 U	1/2 z	2/3 U	2/3 z	
Ar	110.0	0.36	116.0	0.12	
Cr	88.5	1.21	113.5	0.22	
Aw	87.5	1.25	114.5	0.18	Multiple-choice form of the total scale
Cw	106.5	0.50	115.5	0.14	
A	86.0	1.31	109.5	0.38	
R	102.5	0.65	112.0	0.28	
Ar	93.5	1.01	103.0	0.63	
Cr	118.5	0.02	108.5	0.42	
Aw	90.0	1.15	111.0	0.32	Multiple-choice form of the Ar-provocing scale
Cw	98.5	0.81	99.5	0.77	
A	103.0	0.63	100.5	0.73	
R	76.5	1.69	110.5	0.34	
Ar	116.0	0.12	70.5	1.92[1]	
ACr	63.5	2.20[2]	61.5	2.28[2]	
Cr	87.0	1.27	115.0	0.16	
Aw	109.0	0.40	74.0	1.79	
ACw	105.5	0.54	91.0	1.11	Free interpretation form of the total scale
Cw	106.5	0.50	113.5	0.22	
A	100.0	0.75	95.0	0.95	
R	70.5	1.92[1]	54.0	2.58[3]	
N	111.5	0.30	55.0	2.54[3]	
O	41.5	3.08[4]	111.0	0.32	
Ar	116.0	0.12	99.5	0.77	
ACr	66.5	2.08[2]	71.5	1.88	
Cr	119.0	0.00	117.5	0.06	
Aw	114.0	0.20	76.5	1.69	
ACw	101.0	0.71	105.0	0.56	Free interpretation form of the Ar-provocing scale
Cw	95.0	0.95	117.0	0.08	
A	117.0	0.08	118.0	0.04	
R	81.5	1.49	78.0	1.63	
N	107.5	0.46	68.0	2.02[1]	
O	46.5	2.88[4]	110.0	0.36	

[1]) $p=0.05$, [2])$p=0.02$, [3]) $p=0.01$, [4]) $p<0.01$

Table 12. Mann-Whitney U-test of significances of net differences, i.e. differences between examinations 1 and 2, respectively 2 and 3, in paranoid patients subtracted from these differences in not paranoid patients

Boktryckeri AB i Sundsvall 1968